The London School of Economics and Political Science

Transparency in Brazil: Why Has It Failed to Curb Corruption?

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Declaration

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

I declare that my thesis consists of **80,743** words.

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I can confirm that my thesis was copy edited for conventions of language, spelling and grammar by Ana Maria M. Serra.

To Douglas, Isabella and Sophia:

the greatest sources of love, laughter, and inspiration.

To Ana Maria:

For leading the way.

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"In our excitement about the immense potential of new technologies to promote openness and transparency, we may have lost sight of the deeply political nature of the uses to which these technologies are put".

Evgeny Morozov

ABSTRACT

Corruption has been heavily researched in the past decade, garnering attention from a number of different fields, such as political science, organizations, sociology, and information systems. As a result, focus on anti-corruption strategies has also increased. Motivated by the notion that individuals are mindfully rationalist (Palmer 2012), such policies fall under two categories: the manipulation of the incentive structure, thus increasing the cost of corruption, and enhancing transparency so that individuals will feel less inclined to engage in corruption under the watchful eye of citizens. In order to support such investments, e-government has been deemed the platform for it. However, studies in this field have been limited in their generation of theoretical frameworks. In addition, it has been observed that most of the studies have adopted a technological deterministic view to technology, overlooking any social factors which might affect the deployment of transparency. As governments are highly complex institutions, this has meant that many of the e-government initiatives have failed to yield the expected results. In regards to transparency specifically, much of the research has been normative in nature. Part of the issue lies in how transparency has been conceptualized. As identified, there are over fifteen working definitions for transparency, most of them elusive in nature, making it difficult to measure and study it. As a result, and based on Taylor and Lips's (2008) definition, it was proposed that transparency be conceptualized as an information flow, comprising of three distinct stages: creation of information, publication, and public access to information. When viewed in such a manner, it is possible to identify that most of the research conducted on transparency has been to address the publication and access phases, leaving the creational aspect of transparency vastly under-researched. Based on this, this thesis thereby proposed to adopt a socio-technical approach to technology and study a cognitive system (based on the distributed cognition theoretical – Dcog – framework – adopted) situated within a governmental agency in the Brazilian federal government (referred to as Agency X). Brazil, as a focus for this research was chosen due to its documented efforts in investing in transparency which thus far have failed to result in reduced levels of corruption. Coupled with distributed cognition, moral disengagement theory (MD) was also adopted due to the presence of ongoing acts of corruption at Agency X which had been previously identified. This thus made it the perfect setting under which to understand how transparency is created and why it has failed to deter corruption. The methodological approach was therefore a case study and, in order to analyze data effectively, the DiCoT (distributed cognition for teamwork) methodological framework was adopted. Drawing from DCog literature, DiCoT proposes a structured way in which to analyze findings, generating five different models (physical layout, artefact, information flow, social structure, and evolutionary), which together generate a powerful overview of how cognitive processes are distributed between human agents and artefacts, and what role the environment plays in such a setting. Coupled with MD, findings indicated that this cognitive system is unevenly distributed between the human and the technical components, with individuals leading the information flow and transformation, largely dictating how information is stored and processed. This has created opportunities for "breakdowns" whereby the quality of information has been compromised, thereby affecting the overall state of the transparency system. In addition, findings indicated that corruption has persisted due to three factors: (1) technical systems' failings to address local needs; (2) hierarchical structures, with unethical leaders leading the unethical decision-making at Agency X; (3) the high levels of informality. This dynamic, as findings suggested, was facilitated by moral disengagement mechanisms. The result has been a unique study that has provided an in-depth account of how transparency is created and how unethical individuals have dealt with the technical changes that resulted from transparency deployment. In doing so, this study filled a gap in the literature and provided a framework for future studies.

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LIST OF ACRONYMS

CARF - Administrative Council of Tax Appeals

CGU - Comptroller General of the Union

COAF - Control for Financial Activities' Council

CPI - Parliamentary Commission of Inquiries

Dcog - Distributed Cognition

DiCoT - Distributed Cognition for Teamwork

DPF - Federal Police Department

e-SIC - Electronic System for Citizen Information Service

FoIA - Freedom of Information Act

FRL - Fiscal Responsibility Law

GDP - Gross Domestic Product

ICT - Information and Communication Technology

IntSys - Internal System

MD - Moral Disengagement

MPF - Federal Public Prosecutors' Office

NGO - Non-Governmental Organization

PF - Physical File

PO - Purchase Order

RN - Request Number

RoC - Reserve of Cash

SIAFI - Integrated System of Federal Government Financial Administration

SIAPE - Integrated System of Administration of Human Resources

STN - National Treasury Secretary

TRF - Federal Court of Accounts

CHAPTER 1

INTRODUCTION

1.1 Motivation and Object of Research

Corruption has been heavily researched in the past decade by scholars from a variety of fields, such as political science, organizations, sociology, public administration, and information systems (Heidenheimer et al. 1989; Bardhan 1997; Heeks 1999; Rose-Ackerman 2006; Moore 2008). In this regard, Chang and Chu (2006: 259) state that "political corruption is considered one of the most destructive yet unresolved problems common to most societies. Importantly, political corruption represents a direct and brutal betrayal of trust placed in institutions".

As a result, a number of theories have emerged to explain such a phenomenon, as has research on how to combat it and e-government has been hailed as an effective tool against it. The rationale behind such investments has been two-fold: first, e-government is a seen as a mechanism towards streamlining and automating governmental process thereby reducing opportunities for corruption. Second, e-government is seen as a tool towards enhancing levels of transparency and, as a result, making inner government operations more visible and giving citizens the chance to monitor them.

However, as Calland and Bentley (2013) contend, there is a lack of evidence corroborating the effectiveness of technology-mediated transparency, as well as a lack of studies that can effectively demonstrate the links between transparency and corruption. Gaventa and McGee (2013) further add that most studies seem to rely on normative assumptions; in addition, "the assumptions underlying the causal chain, from inputs to outcomes and impact, are absent, vague, or only implicit (…) few initiatives provide concrete claims".

Therefore, this thesis originated as a result of that query: what exactly are the links between transparency and corruption? Past research on transparency in Brazil (as part of an MSc degree in Comparative Politics, concluded in 2012) had led to the conclusion that transparency had not acted as an effective deterrent against corruption. This apparent gap in the literature, coupled with an interest in understanding the issue in Brazil thereby formed the basis for how this thesis was structured.

The aim of this Chapter is to present some of the literature and findings which have motivated this present piece of research (section 1.2). In addition, it aims to present previous work produced on transparency in Brazil which has served to motivate the research undertaken in this thesis (section 1.3). Section 1.4 will then present how this thesis is structured, in addition to the research questions which have been proposed and the methodology adopted. This Chapter ends with a few concluding remarks (section 1.5).

1.2 e-Government and Transparency

E-government can be loosely defined as "the use by government of digital technologies internally and externally, to interact with citizens, firms, other governments, and organizations of all kinds" (Margetts 2009: 114). According to Brown (2005), it was around the early 2000s when the term gained traction, in spite of the fact that the use of information technology by governments can be traced back to at least the 1950s.

Currently, e-government is considered one of the main ways of achieving transparency. Corroborating this, Avgerou et al. (2006: 2) state that "ICT[2] came to be associated not only with

[2] Information and Communication Technology

efficiency gains but also with reduction of corruption and the strengthening of the institutions of democracy". The speed with which governments across the world have adopted ICTs has been impressive (Gallego-Alvarez et al 2010). Calland and Bentley (2013) note that in 1990, only two countries had Freedom of Information legislation regulating Open Government initiatives, whilst currently over eighty do.

Furthermore, scholars observe that the best way of achieving transparency is through the use of technology, most notably in the form of transparency portals (Wescott 2003; Bertot, Jaeger and Grimes 2010; McGee and Gaventa 2010; Pina et al. 2010; Holmen 2011). As a result, a growing number of papers have been published, hailing the benefits of technology as a democratization tool and introducing a series of terms to express this mindset, such as e-transparency, e-participation and Open Government.

Fox and Haight (2011: 353) state however that transparency is not "an all-powerful magic bullet". To this effect, Kling et al. (2005: 594) affirm that "Technological determinism treats ICTs as information processing systems whose technical characteristics cause specific social changes when they are adopted and used. . . Technological determinism cannot adequately account for the interactions among ICTs; the people who design, implement, and use them; and the social and organizational contexts in which technologies are embedded".

Thus, heavily reliant on a technological deterministic view, many e-government studies seem to overlook the "government" factor, focusing instead on the electronic component. As such, they overlook the complex environment that a governmental institution is, and the entrenched structures that have been constructed over time, relying instead on the supposition that investments will automatically translate into the desired results. In addition, current models overlook the specificities of individual national contexts, instead determining that all processes must occur

along the same pattern and that any failed attempts are naturally the result of implementation errors (Bussell 2011). As Rose (2005: 1) contends, **"**E-governance is necessarily influenced by its national context". Therefore, technology itself cannot be regarded as the means of institutional reform, but rather as a tool (Margetts, 2009).

To counterbalance such deterministic views on transparency, an emerging body of research which favors a socio-technical view of technology has started to emerge. As Bostrom and Heinen (1977: 17) explain, under a socio-technical optic, an organization is conceived as a *socio-technical system* which is "made up of two *jointly* independent, but correlative interacting systems – the social and the technical". Hence when analyzing the impact of technology deployment, both organizational and social processes must be considered (Bostrom and Heinen 1977; Kling and Lamb 2000).

In spite of this emerging body, when it comes to transparency specifically, these are still minority voices. Moreover, it is important to note that efforts to relate transparency and corruption have consisted mainly of statistical analyses that, despite demonstrating that a negative correlation between such concepts does in fact exist, have often resulted in weak findings, failing to explain variations in results and the reasons for the existence of so many outliers to the model (Wong and Welch 2004; Gaventa and McGee 2013). Such is the case of Brazil, as concluded in a previous research effort (Martinez 2012).

This will be discussed in the next section.

1.3 Transparency in Brazil

As mentioned in the introductory remarks of this chapter, part of the motivation for this research rested on the fact that it had been concluded previously that Brazil, despite its many efforts in transparency, had failed to effectively deter levels of corruption. This section, therefore, aims to give an overview of what the transparency framework in Brazil consists of and the data that confirms that corruption is still an issue that is very prevalent.

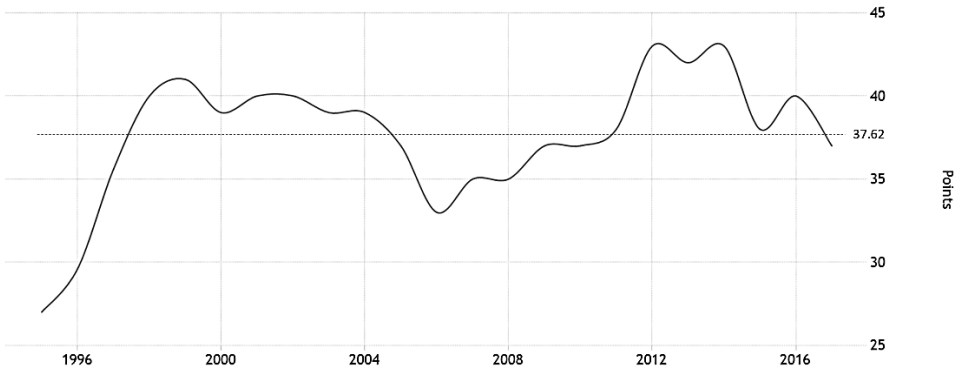
e-Government deployment in Brazil officially began in 2000 (Barbosa et al. 2007; Matheus et al. 2011). The rationale for such investments, according to Magalhães et al. (2009), stemmed from: 1) the idea that this would allow Brazil to join the ranks of developed countries, and 2) an extensive initiative to reform budgetary legislation and allow for transparency of these processes.

As part of this strategy, Brazil enacted the "Fiscal Responsibility Law" (Complimentary Law N.101) in 2000, which imposed certain spending limits on all spheres of government. This legal framework would then be consolidated with additional legislation being enacted in subsequent years: the Transparency Law in 2009, and the Access to Public Information Law in 2011. Moreover, in 2004, the Brazilian federal government launched its Transparency Portal, which provides comprehensive information on spending, transfers, social programs, and personnel.

The information made available on the Transparency Portal is real-time and very detailed. Furthermore, the information contained in the Portal is subject to auditing twice a year and is deemed reliable and trustworthy. In this respect, Brazil was considered the 7th most transparent country in the world (Open Budget Index 2017). In spite of this concerted effort, the expected outcome – of decreased corruption – failed to materialize (Martinez 2012).

Brazil's Corruption Perceptions Index (Transparency International 2012) remains at a high level, and has done so over the years. Comparing its position prior to 2004, when the Transparency Portal was deployed, and after, it was possible to ascertain that levels of corruption have remained relatively stable through time (see Figure 1.1). Moreover, data shows that the cost of corruption has been significant: it is estimated that in the past decade, over US$355 billion were embezzled, which equates to 2.3% of Brazil's GDP (FIESP 2010). Corruption investigations in the past few years (dubbed "Car-Wash" investigations, launched in 2014) have also revealed the extent of corruption within Brazilian government institutions, which has spread to all levels and spheres. Also, it is estimated that the probability of a civil servant who engages in corruption being criminally prosecuted is less than 5% (FIESP 2010).

Figure 1.1 – Brazil Corruption Index 1995 – 2017
Source: Transparency International



Based on findings regarding Brazil, coupled with the need for e-government studies to adopt a more socio-technical view of technology, the question of how exactly transparency operates started to emerge. The next section of this Chapter is therefore to demonstrate how this research has been framed.

1.4 Framing the Study

As discussed, previous research (Martinez 2012) concluded that efforts in Brazil to curb corruption through transparency had failed to materialize. In addition, it was also previously identified that most research conducted in e-government (the platform which allows transparency to exist) and transparency itself has been of a technological deterministic nature. As a result, this thesis favored a socio-technical approach. This section will thus review how this thesis is structured in order to address the research questions that will be proposed.

1.4.1 Thesis Structure

As will be reviewed in Chapter 2, transparency in this study is conceptualized as a flow of information which comprises three distinct phases: creation of information, publication, and public access of information. Based on the literature review undertaken, it is possible to determine that most studies on transparency have concentrated on the publication and public access phases, overlooking the creation stage, which, as argued, is critical to how effective transparency can be. As a result, it was concluded that that would be the focus. The intent would be to find out how information is created and how it is linked to existing corruption levels.

In order to approach such study, Chapter 3 presents two theoretical frameworks which were adopted: distributed cognition (Hutchins 1995) and moral disengagement (Bandura 1986). Distributed cognition is considered a socio-technical theory and, as such, takes into account both technical and social elements in its analysis. Moral disengagement, on the other hand, is rooted in social cognitive psychology, and is used to study corruption amongst the individuals that integrated the unit of analysis which, in accordance with the distributed cognitive theoretical approach

adopted, was the "cognitive system". As a result of the discussion in Chapter 3, three research questions were defined:

R1: How are cognitive processes distributed between agents (human and artefact) at Agency X?

R2: How do breakdowns impact the cognitive system at Agency X?

R3: How do moral disengagement mechanisms facilitate the breakdown of cognitive systems?

Based on these research questions, the object would be to comprehend how information is created, in terms of its distribution between human agents and technical artefacts, but also assess "breakdowns", i.e. instances in which the information flow was subject to workarounds or deviations, which impacted the quality and accuracy of the information being produced. Additionally, the third research question aimed to address the role morally disengaged individuals (which, as will be reviewed are more prone to unethical decision-making) had in such breakdowns.

Agency X, as will be reviewed more extensively in Chapter 5, is the *locus* for the unit of analysis. A government agency within the Brazilian federal government, it was identified there the presence of ongoing acts of corruption, making it the ideal scenario for studying the creation of information in an unethical environment.

Chapter 4 presents discussion on the research design which allows for these research questions to be addressed. As will be discussed, this study adopts a case study approach. It thus makes use of qualitative data gathering techniques, such as interviews and participant observation. Chapter 5 then provides an overview of the context in which the unit of analysis is embedded in.

As will be reviewed, government institutions are complex organizations. As such, the unit of analysis is subject to a number of influencing variables including (but not limited to) the legal framework under which it operates.

Chapter 6 focuses on presenting the data analysis. As will be reviewed, this study applied the distributed cognition for teamwork (DiCoT) by Furniss and Blandford (2006) to the data analysis. DiCoT draws principles from distributed cognition in order to apply it to the analysis of data in a more structured way. Chapter 6 also presents the analysis through the moral disengagement theoretical lens. As a result, Chapter 7 is then able to present findings and address the research questions proposed. Chapter 8 ends with concluding remarks.

1.5 Conclusion

This introductory Chapter served the purpose of presenting the motivation for this piece of research and situating the reader as to how this thesis is structured. Each of the aspects mentioned will be more extensively discussed throughout the Chapters.

As a result of this study, some firm conclusions as to how information is created and its links to corruption will be drawn. In addition, a framework for future studies will be delineated, as well as contributions made to the field of e-government.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

Corruption is a theme that has received a great deal of attention, both in academia and by practitioners and civil society. Likewise, how to combat it has equally received a great deal of attention. In this regard, transparency has been hailed as an anti-corruption mechanism, especially with the advent of technology and its potential to amplify it, with a growing number of studies in several fields (political science, management, information systems etc.) seeking to confirm its effectiveness as a deterrent (Meijer 2001; Pina et al. 2007; Andersen and Henriksen 2006; Andersson and Bergman 2009; Shim and Eom 2009; Heald 2012; Carlitz 2013). Part of a wider and more concerted investment effort in e-government, most research conducted in these fields does indeed demonstrate a negative correlation between transparency and corruption, indicating the effectiveness of such a tool. However, there has been little evidence as to why such strategy works. In addition, as will be reviewed in this Chapter, there are several aspects of transparency which have been under-researched, largely due to how the concept has been approached.

This Chapter seeks therefore to review the main literature on corruption and e-government and thus offer the basis for how this thesis has been framed. As such, it is divided as follows: section 2.2 will review the literature on corruption and two different approaches as to how individuals rationalize when engaging in corruption. Section 2.3 presents anti-corruption measures, more specifically the use of e-government and transparency to curb corruption. Section 2.4 aims to then discuss two differing approaches to technology and e-government: a technological deterministic view and a socio-technical view. Section 2.5 focuses on presenting an alternative

way of conceptualizing transparency which aids in comprehending how it functions, and where gaps in the literature exist. Section 2.6 then ends this Chapter with a few concluding remarks.

2.2 Corruption

The theme of corruption – its causes, effects, and measures to combat it – is an area that has been heavily researched throughout the course of the past sixty years (Gaskins 2013). According to Tanzi (1998), corruption is not a new phenomenon and can be dated back to at least two-thousand years ago; Machiavelli and Rousseau, for example, both wrote about it, with the former describing it as a gap between collective moral standards and everyday conduct (Warren 2004). The difference now (and has been in recent decades) relates to the attention it now garners both amongst scholars, as well as amongst the general public. Several arguments can be raised to justify why corruption now receives more attention than in the past, amongst which, the availability of information that is now available, an increased role played by non-governmental organizations such as Transparency International, and the third wave of democratization along with its ideology of rule of law, freedom of speech and greater accountability (Tanzi 1998; Della Porta 2004).

The vast and rich amount of studies produced has led to a number of different approaches and conceptualizations. Warren (2004: 328), for example, states that corruption should be defined as the reduction of "public agencies of collective action to instruments of private benefits". Nye (1967: 38) on the other hand offers a more comprehensive definition, stating that it is "behavior which deviates from the formal duties of a public role because of private-regarding (personal, close

family, private clique) pecuniary or status gains; or violates rules against the exercise of certain types of private-regarding influence".

Johnston (2005: 11) offers an additional explanation, whereby corruption is the "abuse of a trust, generally one involving public power, or private gains which often, but by no means always, come in the form of money". Nye's and Johnston's definitions point to the difficulty in coming up with a single workable definition, partly due to the fact that corruption does, in fact, take many different forms. To this extent, Johnston (1997: 6) goes on to affirm that:

> *"No issue is more enduring in the corruption debate, and none has so frequently preempted promising discussions, as that of definitions. Despite the fact that most people, most of the time, know corruption when they see it, defining the concept does raise difficult theoretical and empirical questions."*

Certainly, the most used definition can be summed up as the abuse of public power for private gain (Heidenheimer et al. 1989; Bardhan 1997), though Pillay and Dorasamy (2010) affirm that this definition is a gross over-simplification of what corruption actually entails.

This lack of a single workable definition is also reflected in the number of different approaches to studying the concept of corruption. Graaf (2007) and Pinto et al. (2008) suggest that corruption can be approached at a micro or macro level, either focusing on an individual- or organizational-level. Others suggest studying it a national or cross-national level, or indeed at multiple-levels (Azfar et al. 2001; Huberts 2010). The different approaches do not only refer to the level at which it is studied, but also to the theoretical approach of it. Upon conducting research on this topic, at least ten different theoretical approaches were identified (Boudon 2003; Pillay and Dorasamy 2010; Palmer 2012), many of which themselves functioned as an umbrella for further

approaches, in addition to over forty reasons listed as to the determinants of corruption (see Table 2.1).

Table 2.1 – Research on Corruption: Determinants

Political	Economic	Social	Legal
Bureaucracy: Nowak (2001); Gupta (2001)	Competition: Shleifer & Vishny (1993); Ades & DiTella (1997)	Culture: Husted (1999)	Legal System: Theobold (1990); Ali (2003)
Civic Participation: Shen & Williamson (2005)	Economic Freedom: La Palombara (1994); Paldam (2002); Goel & Nelson (2005)	Education: Treisman (2000); Truex (2011)	Penalty System: Shleifer & Vishny (1993); Tanzi (1998)
Decentralization: Shleifer & Vishny (1993)	Economic Growth: Husted (1999); Berdiev et al. (2013)	Ethics: La Porta et al. (1997)	Property Rights: Nas et al. (1986); Acemoglu & Verdier (1998)
Delegation of Power: Klitgaard (1988); Cartier-Bresson (2000)	Income Distribution: Gupta et al. (2001); Serra (2006)	Gender: Dollar et al. (2001); Swamy et al. (2001)	
Democracy: Treisman (2007)	Inflation: Getz & Volkema (2001)	Geography/History: Bloch & Tang (2004); Goel Nelson (2010)	Organizational
Government Size: Goel & Nelson (1998)	Poverty: Evans (1999)	Human Development: Rose-Ackerman & Truex (2012)	Informality: Smith-Crowe et al. (2015)
Information Asymmetry: Rose-Ackerman (1996); Kolstad & Wiig (2009)	Regulations: Tanzi (1998); Treisman (2000); Gerring & Tacker (2005)	Population Size: Fisman & Gatti (2002); Knack & Azfar (2003)	Institutional: Collier (2002);
Political Competition: Brunetti & Weder (1998)	Taxation: Flatters & Bentley MacLeod (1995)	Religion: La Porta et al. (1999); Paldam (2001)	Power: Brown et al. (2005); Moore et al. (2018)
Political Instability: Leite & Weidemann (1999); Persson & Tabellini (2001)	Trade Openness: Sandholtz & Koetzle (2000)	Urbanization: Meier & Holbrooke (1992)	Social Influence: Anand et al. (2005); Goette et al. (2006); Treviño et al. (2006)
		Values: Gibbons (1982); Fisman & Miguel (2007)	

The aim of this Chapter, however, is not to present an exhaustive discussion of every single theoretical approach to corruption, as this would detract from the focus of this thesis. Instead, as Palmer (2012) suggests, these can be grouped into two categories, which refer to corrupt individuals themselves regarding their intent to engage in corruption: mindful rationality, and mindless (bounded) rationality (Palmer 2012). Both categories serve as an umbrella for theoretical approaches (see Table 2.2) and have produced a significant number of studies (though the former has been the predominant approach). In addition, they both offer diametrical views on corruption and corrupt-intent. These will be reviewed in more detail in the next section.

Table 2.2 – Mindful and Mindless Approaches

Approach	Examples of Theories Which Adopt This Approach	Examples of Studies
Mindful and Rational	Rational Choice, Deterrence, Principal-Agency, Ethical Decision	Rasmusen and Ramseyer 1994; Rose-Ackerman 2006; Hastie and Dawes 2001; Holmes 2009; Chen 2011; Voliotis 2011; Shalvi 2016
Mindless and Bounded Rationality	Cognitive Psychology, Culture, Situational Social Influence, Administrative, Institutional	Collier 2002; Anand et al. 2005; Darley 2005; Lorenz et al. 2006; Treviño et al. 2006; Moore 2008; Carson 2014; Moore et al. 2018

2.2.1 Mindful Rationality

Mindful rationality is the most dominant account of corruption (Palmer 2012) and assumes that individuals are rational beings, engaging in rational decision-making. Downs (1957: 4) summarizes this type of individual by claiming that "conscious rationality prevails". This approach assumes that people engage in corruption when they perceive that the potential benefits will

outweigh the costs (Rose-Ackerman 2006). In other words, individuals are "rational utility-maximizers" (Collier 2010: 12) and utilize a cost-benefit framework when deciding whether or not to engage in corruption (Becker 1962). As Oliveira (2007: 16) explains, "rational individuals establish a weighing mechanism between choice and value. Rational methodologies lead to the optimization of the outcomes by emphasizing the process of choosing rather than what is chosen". Hence, under this approach, emphasis is given to the rational thought process undertaken by individuals in order to evaluate the situation and hence make a choice of whether or not to engage in corruption.

Mindful rationality also posits that individuals act on the basis of self-interest preferences (Hall and Taylor 1996). By calculating costs and benefits, individuals are also seeking to achieve their preference, whatever that may be (happiness, power, money etc.). Thus, this approach tends to regard rational beings as people of a dubious character, or "bad apples". As Graaf (2007) explains, "bad apples" are "people with a faulty (moral) character. . . There is a causal chain from bad character to corrupt acts; the root cause of corruption is found in defective human character and predisposition toward criminal activity". In regard to the morality of individuals, Graaf (2007) explains however that there is little empirical evidence for this claim which is mostly based on assumption.

Two theories which adopt this approach are deterrence theory and principal-agency theory. In the case of deterrence theory, Carson (2014: 13) claims it refers to raising levels of penalty and maximizing chances for detection and prosecution, actions that would result in deterred behavior due to the increased costs (see also Rose-Ackerman 2006 and Cooter and Ulen 2014). To this extent, Greve et al. (2010: 60) explain that "Rational-choice modeling assumes self-interested actors who need to be controlled in order not to choose actions that would be beneficial for them

but harmful for transaction partners or third parties". As such, the solution for curbing corruption is to increase levels of sanctioning.

Regarding the principal-agency theory, this refers to the relationship between principals (i.e. citizens) and agents (i.e. bureaucrats). Both enter into a relationship in which the former delegates power and responsibility to the latter. If, however, there are little chances for the principal to monitor the activities of the latter, since these are assumed to be rational and maximum utility-seekers, then there is a high probability that agents will take advantage of principals and seek to benefit and abuse that relationship. The lack of opportunity for monitoring the activities of the agent by the principal is due to that agents possessing knowledge that principals do not as a result of the fact that it was delegated to them by means of power and responsibility. This imbalance is referred to as "power asymmetry", hence the only way to curb corruption in this instance is to reduce the asymmetry by means of increased transparency.

The mindful rationality approach has not, however, been immune to criticism, with some highlighting what they perceive to be a reductionist quality to it. According to Mercer (2005: 80-81), studies which adopt this approach "explain how one should reason, not how one actually reasons" nor do they adequately address how people "make decisions to reach an outcome". Carson (2014: 19) adds that "despite the theoretical and intuitive elegance of the rational actor model, the reduction of human decision-making processes to autonomous calculations of probabilities and outcome appraisals fails to explain why individuals frequently make choices that do not maximize their total expected utility and thus appear 'irrational'".

To this extent, mindless rationality represents a diametrically opposite view. This will be reviewed in the next section.

2.2.2 Mindless Rationality

Mindless rationality is diametrically opposed to mindful rationality. Whereas in the former, individuals are theorized to be rational beings, in the latter, individuals can act in ways that are irrational, making decisions that can even go against their own best interest. In addition, as opposed to the mindful rationality approach which has dominated corruption studies, research is still emerging in this area (Palmer 2012).

Under this approach, individual decision-making is subject to the influence of many factors, such as motivation, mental capacity, social influence, and cultural context. Moreover, it encompasses several theoretical approaches, such as cultural, institutional, and cognitive psychology theories. The fundamental idea that unites this group of theories is its emphasis on the social context. In other words, these theories emphasize context as an influencing factor of human behavior. As Palmer (2012: 15) affirms, "the human experience consists largely of exposure to socially constructed input. . . [people] react automatically to one's environment, following innate predispositions, learned social codes, or organizational rules and protocols". What this means is that individual behavior is subject to social influence and how that individual construes their reality.

Cognitive psychology specifically has emerged as a group of theories which adopt this view of the individual whereby attitudes, personal beliefs, and subjective norms play a decisive role (Darley 2005). As Oliveira (2007: 13) states, this body of work "has been able to explain at some extent why people may deviate from rational behaviors. One of these explanations, for example, is based on the principle that people's set of beliefs, or culture, might influence and corrupt information processing" (Oliveira 2007: 13). Studies that adopt this approach thus suggest

that individuals are subject to conducting faulty analyses of costs and benefits, even to the detriment of their own personal benefit.

This approach to corruption can be traced to the human agency model in social cognitive psychology theory by Bandura (1986), which determines that human functioning is the result of a "three-way, interactive causation", a model he labels as "triadic codetermination" (Bandura 2016: 6). This means that human functioning is the "product of the interplay of personal influences, the behavior individuals engage in, and the environmental forces that impinge on them" (ibid). This three-way interplay takes place in a bi-directional way, with each of the three factors listed actively reinforcing one another. Thus, individual behavior is both subject to the influence of their environmental context, and an influencer in their environment around them. Likewise, their behavior stems from personal determinants, but the result of their behavior will also bear an influence on them personally. This adds a higher level of complexity as to why individuals would engage in corrupt behavior, with no straightforward answer.

The theory of reasoned action is another which falls under this category. It posits that human behavior is the result of motivational influences (Madden et al. 1992). In this regard, Madden et al. (1992: 3) affirm that beliefs represent "the underlying influence on an individual's attitude toward performing the behavior". Corrupt behavior is therefore subject to psychological determinants, which are not always the result of rational information processing. The main difference between the theory of reasoned action and social cognitive psychology is that the latter does not posit that behavior is solely due to internal cognitive processes. Rather, it states that individuals are influenced by their social contexts.

Researchers who adopted this approach to organizational studies have established some common factors as to why corruption occurs:

1. Power. According to them, individuals in a position of power are more likely to engage in corruption. This is due to a series of different factors, amongst which, the belief that power grants individuals the right to pursue self-centered goals. Darley (2005) also suggests that those in a position of power are able to easily influence those who they hold power over. Unethical leadership has been found to be positively correlated with corruption levels (Moore et al. 2018).
2. Rationalization. Dupuy and Neset (2018) describe this as the action to rationalize or justify behaviors that would otherwise be morally reprehensible. Palmer (2012) refers to this process as reframing, whilst Bandura (1986) expands on this notion and offers a full range of mechanisms through which individuals "morally disengage", thus eliminating any feelings that might otherwise result in self-condemnation. Gino (2016: 83) further explains that "self-serving justifications can be viewed as a form of 'moral disengagement' in which cognitive mechanisms deactivate moral self-regulation".
3. Informality. Smith-Crowe et al. (2015) contend that informality within an organization allows for corruption to flourish. In this regard, formal arrangements (i.e. norms and codes of conduct) serve to constrain behavior. In lieu of such formal arrangements, corruption tends to grow.
4. Social Influence. Researchers affirm that the degree of interaction between individuals in a work setting is high. Due to the social relationships formed, this dynamic has the ability to shape behavior (Cialdini 2001). Individuals within work environments where levels of corruption are high will therefore present a greater propensity towards engaging in corruption themselves because of the influence of their immediate context

and social influence experienced. This proposal is congruent with that posited by Bandura (1986) in his model of human agency.

For researchers who have adopted this approach, the notion of the "bad apple" should be contested, since they believe that those who engage in corruption are not necessarily bad people or of a morally dubious character. On the contrary, studies have shown that morality is flexible in that you may behave immorally in one aspect of life, but righteously in another (Bandura 1986; 2016). To this extent Gino (2016: 83) adds that "people who value morality often show moral flexibility, behaving unethically if they are able to convince themselves that their behavior is not immoral. As this body of research suggests, morality is malleable". Dimant (2013: 14) adds that an "individual's actual behavior is unlikely the result of a sound business calculation, as the risk is not properly assessed". Thus, the cognitive processes that compel an individual to engage in corruption are diverse and subject to a confounding number of factors.

In summary, this view on corrupt individuals posits that individuals are bounded in their rationality. Moreover, such individuals are viewed as complex, whose decisions may or may not be rational, and subject to external influences. Oliveira (2007) cites that the main differentiator between bounded rationality and mindful rationality is that the former focuses on how individuals make decisions, whereas the latter clarifies how individuals should decide.

As stated previously, most of the research in corruption conducted thus far has adopted the rational approach which, due to the way it views individuals, has been able to provide a more parsimonious body of work (Gino 2016). As a result, most of the anti-corruption measures devised to date have based themselves on it.

2.2.3 Summary

The great interest in the study of corruption has generated plenty of studies on the topic, originating from a varied range of fields: public administration, political science, law, among others. This has resulted in several different explanations for why corruption exists (as can be viewed in Table 2.1) and reflects the diversity of the topic and difficulty in pinpointing one single solution.

Such diversity is also the result of the many different theoretical approaches that have been adopted to study corruption. These tend to fall into two categories: those that view the corrupt individual as rational, and maximum utility-seekers, and those that view the individual as bounded in their rationality and how they construe their realities, subject to influence from their environment.

The great interest in corruption has resulted in a range of anti-corruption studies and solutions, amongst which investments in e-government. This will be reviewed in the next section of this Chapter.

2.3 Anti-Corruption Measures

In the mid-1990s, a range of international organizations such as the United Nations, the IMF (International Monetary Fund), and the World Bank began to raise awareness to the issues resulting from corrupt practices and lobby for measures which had the intent of curbing corruption (Bukovansky 2006). Several NGOs, such as Transparency International, also played a pivotal role in advancing the anti-corruption discourse, which has resulted in a range of different policies and recommendations as to how to tackle the issue (Hopkin 2002).

Collier (2002: 13) states that the purpose of "anti-corruption programs is to strengthen state boundaries separating public office from private interests". In that regard, the recommendations made have been mostly inspired by the mindful rational view of individuals and the bulk of anti-corruption policies fall into two categories. The first refers to the manipulation of the incentive structure. Based on the notion that individuals are maximum utility-seekers, these policies aim to increase the cost of corruption for those who engage in it and offer benefits or incentives for those who refrain from it (Hopkin 2002; Dupuy and Neset 2018). Such mechanisms have resulted in recommendations for enhanced levels of sanctioning and strengthening of legislative frameworks on the one hand, and financial and business incentives on the other.

The second recommendation refers to reducing the "information asymmetry" and reengineering the institutional design so as to strengthen oversight and control (Rothstein 2011). This means making more information available to principals (e.g. civil society) and creating opportunities for the behavior of agents to be monitored. Such a notion, based on the principal-agency theory, has resulted in recommendations for organizations and governments to increase levels of transparency (Arellano-Gault and Lepore 2011). From this perspective, transparency is considered to be "the ability of the principal to observe how the agent behaves and the consequences of the agents' behavior". Bertot et al. (2010: 264) add that "transparency ultimately serves to keep government honest".

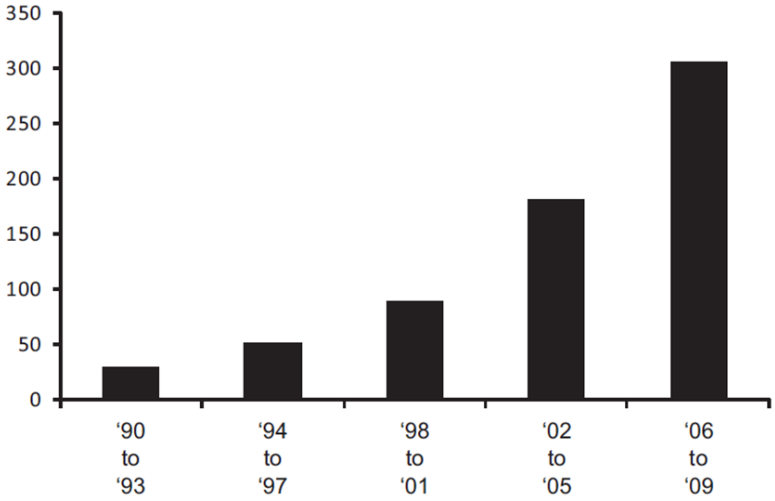
Largely facilitated by the Internet and information and communication technologies (ICTs), the number of governments across the world that have adopted transparency as an anti-corruption mechanism has grown considerably (Bertot et al. 2010). Norris (2002) notes that in the early 2000s there were already over fourteen thousand agencies online worldwide. These topics, transparency and the means for promoting it, will be discussed in the next section of this Chapter.

2.3.1 Defining Transparency

Transparency is an important instrument in democracies and is considered one of the central elements of a democracy, considered to be a "key way to address both developmental and democratic deficits" (Gaventa and McGee 2013: 4) and one of the most powerful tools against corruption (Lindstedt and Naurin 2010). One of the main reasons for this is that a transparent government is capable of revealing "whether representatives really represent, whether functionaries actually function, and whether the system of justice is truly just" (Fox and Haight 2011: 354).

The term gained relevance in the 1990s when it became associated with elements of "good governance" (Schmitter 2004: 990). According to Margetts (2011: 518) promoting transparency means to "fulfil citizens' 'right to know' about government and policy making", in addition to being the "'key to better governance' by enhancing certain administrative values, such as integrity, fairness and efficiency". Due to its perceived importance in both political and management sciences, it has become a term that has been widely discussed, with the number of studies on the topic growing considerably over the years (Fox and Haight 2011; Schmitter 2010; Heald 2012) (see Figure 2.1), with many different interpretations being attributed to it (Matheus et al. 2012). In his study, Schnackenberg and Tomlinson (2016) identified more than fifteen different meanings attributed to the term transparency in articles released between 1990 and 2009.

Figure 2.1 – Papers on Referencing Transparency in Business Journals
Source: Schnackenberg and Tomlinson (2016)



Definitions for it have been mostly vague and often confusing as it is commonly mistaken for accountability, sometimes considered a dimension of the latter, sometimes synonymous with it, despite the fact that the two are not the same (Stirton and Lodge 2001). Furthermore, due to its perceived democratic virtues, "transparency is often presented as a public virtue, which it is discreditable or inadvisable to oppose" (Heald 2012: 31). In this sense, Kim et al. (2005: 649) add that the concept of transparency "carries with it a powerful array of moral and political associations, including honesty, guilelessness, and openness".

Meijer (2009: 258) puts it simply as "lifting the veil of society" and Birkinshaw (2016: 189) posits that it refers to the "conduct of public affairs in the open or otherwise subject to public scrutiny". More than simply gaining an insight into the conduct of public institutions, transparency refers to openness of processes, procedures, rules, regulations, decisions, operations, functioning and performance; in other words, all information that is necessary for evaluating the institution in question (Bellver and Kaufmann 2005; Kim et al. 2005; Hood 2006; Etzioni 2010;

Grimmelikhuijsen 2010; Lindstedt and Naurin 2010). Roberts (2009: 957) reflects that transparency, therefore, serves to "cast light upon what would otherwise remain obscure or invisible". Thus, information is vital for the promotion of citizen rights, and an essential part of good public governance (Margetts 2011).

Heald (2006: 26) explains that "transparency extends beyond openness to embrace simplicity and comprehensibility" and "requires external receptors capable of processing the information made available". Both Birkinshaw (2006) and Heald (2006) allude to the possibility of a system being open but not necessarily transparent. This, therefore, is an important consideration for those evaluating the extent to how transparent an institution really is.

Such an array of different definitions for the term have led to a range of different studies, several of which have adopted different understandings towards the topic. Moreover, the lack of definition for transparency has often resulted in it being treated as something "elusive" and over-simplified, resulting in superficial analyses of the issue (Heald 2012). Heald (2012: 30) contends that "the conceptualization of transparency has to be more sophisticated than current rhetoric implies".

In this regard, Schnackenberg and Tomlinson (2016) affirm that though the definitions vary widely, especially across the different fields of research, there is one consensus, in that transparency refers to "information". Angélico (2012) adds that the term relates to the information flow and also to the quality of information and its use. Hence, transparency, in its broadest sense, pertains to all the variables that may affect information flow in a polity, such as information that is regular and accurate, timely and reliable, and which is accessible to all relevant stakeholders (Stiglitz 2002; Stasavage 2003; Hollyer et al. 2011). As will be further discussed in a subsequent

section, transparency is also subject to the influence of a range of different factors, such as the legislative framework, technical constraints, and the people who actually produce the information.

Another important consideration is the form in which transparency is delivered. Scholars in the field agree that transparency has increased due to technology (Oliver 2004; Meijer 2009). In that regard, Meijer (2009: 258) affirms that "modern transparency is computer-mediated transparency". Hence, transparency has largely been facilitated by e-government investments. This will be discussed in the next section.

2.3.2 e-Government and Transparency

e-Government can be broadly defined as "the use by government of digital technologies internally and externally, to interact with citizens, firms, other governments, and organizations of all kinds" (Margetts 2009: 114), and the speed with which governments have adopted ICTs has been impressive (Gallego-Alvarez et al 2010). In the early 2000s, there were already over fourteen thousand agencies online worldwide (Norris 2002). Likewise, in 1990 only two countries had Freedom of Information (FoIA) pieces of legislation regulating Open Government initiatives, whilst currently, over eighty do (Calland and Bentley 2013). According to Brown (2005), it was around the early 2000s when the term gained traction, in spite of the fact that the use of information technology by governments can be traced back to at least the 1950s.

The rationale behind investments in technology by governments across the world is two-fold: first, the use of e-government is viewed as a means of making government processes more efficient, reflecting governance practices adopted by the private sector (Pina et al. 2007; Gaventa and McGee 2013). In addition, automating government processes is seen as a form of curbing

corruption since it is believed to restrict discretion by agents. In this regard the experience in Seoul, Korea, whose local government deployed a platform that allowed for the automation of civil applications (the Government Online Procedures Enhancement – OPEN), is seen as a success story (Kim et al. 2009).

The second main driving force refers to the democratization effects e-government is perceived to have. As mentioned previously, e-government is seen as the platform towards achieving greater transparency, thus increasing levels of accountability and curbing corruption. In this regard, studies such as the ones developed by Andersson and Bergman (2009), Kim (2014), Shrivastava and Bhattacherjee (2014), Srivastava et al. (2016), Bauhr and Grimes (2017), and De Simone et al. (2017) all provide evidence that a negative correlation between transparency and corruption does in fact exist, reinforcing the need for investments to be made in e-government platforms that support such actions.

Justice et al. (2006) affirm however that there is a clear gap between normative theory and actual practice since they believe many of the models presented in the e-government literature are vast over-simplifications of what in reality happens. Adopting a deterministic view of technology, most e-government studies seem to overlook the "government" factor, focusing instead on the electronic aspect. As such, they overlook the complex environment that is a governmental institution and its entrenched structures that have been constructed over time, relying instead on the supposition that investments will automatically translate into the desired results.

In addition, current models overlook specificities of individual national contexts, instead determining that all processes must occur along the same pattern and that any failed attempts are naturally the result of implementation errors (Bussell 2011). As Rose (2005: 1) contends, "While Internet technology is much the same around the world, states and societies are not . . . E-

governance is necessarily influenced by its national context". Therefore, technology itself cannot be regarded as the means of institutional reform, but rather as a tool (Margetts 2011).

The result has been, according to Elahi et al. (2011), that approximately 85% of government initiatives fail, criticizing this rapid adoption of ICTs by governments without proper and careful analysis. Luna-Reyes et al. (2005) cite a 1998 survey which showed that e-government failures occurred 90% of the time due to socio-organizational factors. Regarding transparency efforts specifically, a few dissenting views have emerged contesting the notion that transparency should result in less corruption (Fox 2007; Hood 2010; Fox and Haight 2011; Frølich 2011; Arellano-Gault and Lepore 2011; Gaventa and McGee 2013). Bannister and Connolly (2011:1) note however that these are still "minority voices",

To counterbalance this deterministic view, studies proposing an alternate view to technology have emerged, proposing that they are in fact socio-technical systems. In this regard, Damodaran et al. (2005: 1) affirm that e-government "systems and their associated processes, like many systems and processes, are inherently 'sociotechnical' in nature, i.e. they involve people interacting with technology to deliver outcomes not achievable by either the technology or the people working alone. . . There is a substantial body of evidence which suggests that this one-sided approach to design is one of the main reasons why new systems fail to achieve their expected benefits". Heeks (2006: 4) complements this notion by affirming that e-government systems "combine both the social – that is, people – and the technical. This is the first indication that, when managing e-government, both social and technical (otherwise known as *soft* and *hard*) issues will have to be dealt with".

Based on what has been discussed thus far, it is clear that two different approaches to the study of e-government have emerged: a technological deterministic view and a socio-technical approach. This will be reviewed in the next section.

2.4 Socio-Technical vs Technological Deterministic

As reviewed, most of the research in e-government and transparency has followed a technological deterministic approach, whereby technology is the driving force behind change. Bimber (1990: 9) observes that this view was developed due to the fact "that technology is generally accompanied by unintended consequences, which even willful interveners are unable to anticipate and control. This phenomenon is interpreted to mean that technology is at least partially autonomous and that it is responsible for determining certain social outcomes". Furthermore, technology-enabled investments are invariably perceived as positive and desirable due to the proposition that it makes information more readily and easily available (Margetts 2006; Luna-Reyes et al. 2014), and more structured (Margetts 2006). Technology is also able to handle large amounts of data, lower the cost of transparency and response time, and allow for less discretion by public servants, since they are forced to more strictly adhere to moral standards and performance indicators (Margetts 2006; Meijer 2009; Bannister and Connolly 2011; Luna-Reyes et al. 2014).

As Mackenzie and Wajcman (1999: 5) note however, "the view that technology just changes, either following science or of its own accord, promotes a passive attitude to technological change. It focuses our mind on how to *adapt* to technological change, not how to *shape* it". Shane (2012: 12) further affirms that "if technology were the key to democratic success, then we would now be living in an age in which we all, without regards to class or social status, would have

unprecedented opportunities to achieve our personal aspirations and to shape the collective lives of the communities in which we live".

To counterbalance technological determinism, social shaping of technology (and other variants, such as the social construction of technology) emerged, which, instead, focus on how social, institutional, and cultural factors aid in shaping technological change (Williams and Edge 1996). However, as Kallinikos (2002: 289) points out, how far the social aspects can shape the technology is restricted by its design and thus, not infinitive. To this extent, he affirms that "prior commitments and choices prefigure developments of a particular technology at a given moment".

Sitting therefore in between these two ideological stances is the socio-technical approach, which deems neither the social nor the technical the dominant force (see Table 2.3 for comparison). Rather, these are mutually reinforcing. Sawyer and Jarrahi (2013) explain that this is an important point since:

> *"a singular focus on technology leads researchers into inappropriate materialism. On the other hand, a focus on technology as a solely social production has led to an overreliance on social orders as primary drivers, potentially leading to social determinism. In contrast, the sociotechnical perspective . . . speaks directly to the complex and dynamic interactions among technological capacities, social histories, situated context, human choices and action rather than looking for simplified causal agency" (Sawyer and Jarrahi 2013: 4-5).*

Sawyer and Jarrahi's (2013) view expresses what the reality of public organizations are like: complex and dynamic. In the case of the Brazilian federal entities, it is made up of an inordinate number of agencies and people, all of which is embedded in a cultural context, hence the need to consider these aspects when studying technological change. On the other hand, an overreliance on these social aspects would mean disregarding any technological impact, which can, and does, alter technical procedures in some way.

Table 2.3 – Approaches to Technology Diffusion
Source: Adapted from Kling and Lamb (2000: 302)

Technology-Deterministic	Socio-Technical
IT is a tool.	IT is a sociotechnical network.
Business model is sufficient.	Ecological view is needed.
One-shot implementation.	Implementation is an ongoing social process.
Technological effects are direct and immediate.	Technological effects are indirect and involve different time scales.
Incentives to change are unproblematic.	Incentives may require restructuring and may be in conflict with other organizational actions.
Politics are bad or irrelevant.	Politics are central and even enabling.
IT infrastructures are fully supportive.	Articulation work is often needed to make IT work, and sociotechnical support is critical for effective IT use.
Contexts are simple (described by a few key terms or demographics.	Contexts are complex (matrices of business, services, people, technology, history, location etc.).
Knowledge and expertise are easily made explicit.	Knowledge and expertise are inherently tacit/implicit.

Barley (1986) notes that the same technology can incur different outcomes across different organizations. In addition, "different social groups can conceptualize the same technology in different and often contradictory ways" (Orlikowski and Iacono 2000: 356). In other words, social forces do matter in helping to shape technological outcomes. Cultural and cognitive contexts matter too. The approach reflects what Orlikowski and Iacono (2000) identify as the 'ensemble view' of technology. That is, "hardware and software are components of a more complex socio-technical ensemble that includes people, work processes, and institutional and cultural factors" (Luna-Reyes et al. 2005: 94).

Based on these arguments, it seems reasonable to affirm that transparency systems can and should be theorized as socio-technical systems since they imply change and disruption in organizations in ways that affect both social and technological forces. Implementing transparency requires introducing new systems and processes, the impact of which can be felt on both the technical and the social sides, hence why they must be considered a socio-technical system. As Bostrom and Heinen (1977: 17) explain, under a socio-technical optic, an organization is conceived as a *socio-technical system* which is "made up of two *jointly* independent, but correlative interacting systems – the social and the technical". Hence when analyzing the impact of technology deployment, both organizational and social processes must be considered (Bostrom and Heinen 1977; Kling and Lamb 2000).

In spite of evidence that indicates that an overreliance on the technical aspect leads to failure, this approach has dominated the literature in e-government. The result of such a deterministic view of is that it has failed in its attempts to produce theoretical frameworks (Heeks and Bailur 2007; Yildiz 2007) and few studies have aimed to offer explanations as to why things happen the way they do. Taylor and Lips (2008: 142) further add that current studies on e-government, with its heavy positivist emphasis, prohibit "deeper and more qualitative evidence-gathering and judgement about what is happening to the polity – the myriad of relationships that make up a political system – whilst e-government projects are being devised and implemented".

Regarding transparency specifically, a technological deterministic view has also been the driving force behind such investments, with the intent being that investments in transparency should automatically result in less corruption. This notion has led many studies to overestimate the effectiveness of transparency. Over the course of the years, there have been an increasing amount of studies attesting to the negative correlation between transparency and corruption (see

Table 2.4). Yet, such studies have failed to discuss the outliers to this proposition, such as Brazil and South Africa, both of which have consistently ranked high in the Open Budget Index but have struggled with grappling corruption.

Table 2.4 – Studies on Transparency and Corruption

Study	Journal
Andersson and Bergman (2009)	Information Economics and Policy
Bertot et al. (2010)	Government Information Quarterly
Abu-Shanab et al. (2013)	International Journal of Electronic Governance
Kim (2014)	Public Organization Review
Shrivastava and Bhattacherjee (2014)	Twentieth Americas Conference on Information Systems Proceedings
Srivastava et al. (2016)	MIS Quarterly
Bauhr and Grimes (2017)	Crime, Law and Social Change
De Simone et al. (2017)	The B.E. Journal of Economic Analysis and Policy
Brusca et al. (2017)	Journal of Comparative Policy Analysis

In the case of Brazil specifically, though it has been one of the leading countries in opening up its governmental data and making it available online, it has failed to experience decreasing levels of corruption as discussed in Chapter 1. It is possible to conclude therefore that, though desirable in any democratic environment, transparency will not on its own automatically translate into reduced corruption and enhanced participation – it is not *per se* a transformative initiative (O'Neill 2006). As Roberts (2009: 958) notes, "the effects of transparency depend on how it changes *behind* closed doors". It becomes thus apparent that a shift towards a more socio-technical form of conceptualizing transparency is required. This will be discussed in the next section of this Chapter.

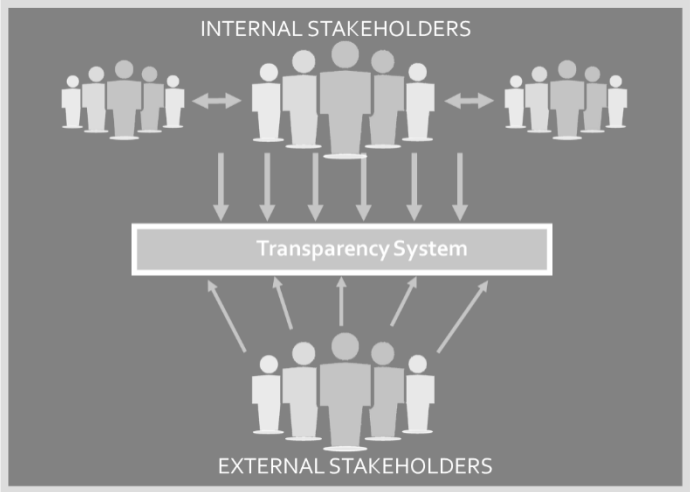
2.5 Conceptualizing Transparency

As discussed previously, there is no single way of defining transparency, with different researchers adopting a range of different definitions. Perhaps the most commonly used definition is "lifting the veil of society" (Meijer 2009). This is, however, a somewhat vague definition, making it difficult to measure it or study it. This is why it is necessary to develop a more comprehensive understanding of the term.

Taylor and Lips (2008: 142) categorize transparency as referring to information flows, determining that it, in fact, refers to "the creation, flow and holding of information". Hosseini et al. (2018: 253) add that "transparency is generally defined as the open flow of information amongst stakeholders". In this regard, they suggest that in order to understand transparency within any given context, it is necessary to, first of all, understand who the stakeholders are, i.e. who provides the information and who receives it. In addition, Hosseini et al. (2018) affirm that it is necessary to understand the information medium, that is, the channels used to relay that information.

In the case of government transparency portals, such as the one managed by the Brazilian federal government, it is possible to identify that it consists of information flowing from the creators of it (a "source", i.e. civil servants) to a recipient (i.e. citizens). In addition, the medium would be the web portal, or the technology platform (see Figure 2.2).

Figure 2.2 – The Transparency Systems Environment



Thus, transparency can, in fact, be conceived of as a system whereby the information touches upon a range of different actors and is transmitted via a technical artefact. In addition, in the context of a governmental web portal, it is important to consider that this system is subject to processing rules, i.e. the legal framework, different interest groups, cultural-historical aspects, and technology itself.

The environment under which information is produced – especially in public settings – is a highly complex one. Referring back to Figure 2.2, it first of all comprises several different stakeholders, both internally and externally. Civil servants, when producing information, are accountable to a range of different people: their direct supervisor, the head of the office at which they work at, the Ministry under whose authority their agency is, as well as agencies at other Ministries within the federal sphere.

In addition, the information produced is done so in accordance with an existing legal framework and a range of norms. In Brazil, for example, budget information that is published on

the Transparency Portal must attend to a series of legal requirements regarding timeliness, format, accuracy etc. Furthermore, it is subject to the constraints imposed by the technical system itself.

Referring back to Taylor and Lips's (2008: 142) definition of transparency as information flows, "the creation, flow and holding of information", and Hosseini et al.'s (2018) definition, it is possible to affirm that transparency is, in fact, an information system. Moreover, it is possible to identify that it comprises three distinct stages: the **creation** of information (i.e. the "source"), the **publication** of information in its various formats (i.e. the "medium"), and the **public access** stage which allows for citizens to interact with the published information (i.e. "the recipient") through which information flows (see Figure 2.3).

Figure 2.3 – Transparency as an Information System

Conceptualizing transparency in such a manner facilitates the comparison between research that has been produced thus far on the matter since each phase raises different concerns regarding how to make transparency more effective. In this regard, studies that sought to understand how to enhance citizen participation would be categorized as studies pertaining to the "public access phase".

In fact, when reviewing the literature on transparency (see Table 2.5 for overview), it is regarding this phase that most studies have emerged. Though they range somewhat in focus, most discuss the issue of public participation and interaction, such as studies by Bertot et al. (2010), Chuna et al. (2010) and Bonson et al. (2012) which suggest the use of social media to promote interaction. Others discuss the issue of trust and how transparency can enhance that (Wong and Welch 2004; Tolbert and Mossberger 2006; Kim and Lee 2012). There are also studies that have analyzed characteristics of citizens who access government web portals (Cunha et al. 2011). Most studies, however, approach the issue of corruption and how transparency can be used as a deterrent for it (Hazell and Worthy 2010; Lindsted and Naurin 2010; Filgueiras 2011; Cordis and Warren 2014; Harrison and Sayogo 2014).

Another approach to the study of transparency refers to concentrating efforts on the publication phase of the information system depicted in Figure 2.3. Studies that have done so have discussed technical aspects of web portals and their design (Gant and Gant 2002; Esteves and Joseph 2007; Lourenço 2015; Ruijer et al. 2017). Studies that concern themselves with this phase of the information system have also analyzed aspects regarding the data itself, such as quality and relevance (Lausen et al. 2005; Correa et al. 2014; Palmirani et al. 2014).

The creation phase, however, has received far less attention than the other phases. Research by Arellano-Gault and Lepore (2011) in Mexico and by González-Zapata and Heeks (2015) regarding open government in Chile are some of the few exceptions, a surprising fact since it is at this phase, the creation of information, in which the quality of information is dictated, and therefore the degree to which external stakeholders (civil society) will be effective in its efforts to monitor what the government is doing.

It seems appropriate therefore to assume that the success of transparency thus depends on a government's ability to create reliable and high-quality information, the key issue here being what its abilities to do so are. As such, an analysis of the effectiveness of a transparency system must therefore necessarily involve the analysis of conditions under which information is produced, in other words, the "creation" stage. Attending exclusively to the other two stages of information flow is a fallacy, as it cannot accurately give a full account of why transparency fails.

Table 2.5 – Overview of Studies on Transparency by Phase

Creation	Publication	Public Access
Arellano-Gault and Lepore (2011) González-Zapata and Heeks (2015)	Gant and Gant (2002) Lausen et al. (2005) Esteves and Joseph (2007) Correa et al. (2014) Palmirani et al. (2014) Lourenço (2015) Ruijer et al. (2017)	Welch et al. (2004) Torbet and Mossberger (2006) Bertot et al. (2010) Chuna (2010) Hazell and Worthy (2010) Lindsted and Naurin (2010) Cunha et al. (2011) Filgueiras (2011) Bonson et al. (2012) Kim and Lee (2012) Cordis and Warren (2014) Harrison and Sayogo (2014)

Referring back to discussions regarding the different approaches to technology (technological determinism vs socio-technical), the dominant account of studies which have adopted a deterministic approach may explain why the creation phase of information has been overlooked. If technology is transformative, then those responsible for creating information will necessarily be transformed by it and abide by the new technical systems' processing rules and constraints. However, if adopting a socio-technical approach, then that will not necessarily be the

case. As Kling et al. (2005: 426) affirm, “ICTs do not exist in social or technological isolation. Their “cultural and institutional contexts” influence the ways in which they are developed, the kinds of workable configurations that are proposed, how they are implemented and used, and the range of consequences that occur for organizations and other social groupings”.

This lack of research adopting a socio-technical approach to transparency, especially at its creation phase, therefore represents a gap in the literature. Understanding the dynamics under which information is created may aid in clarifying why transparency has been unable to curb corruption in certain national contexts such as, in this case, Brazil.

2.6 Conclusion

This Chapter aimed to review the literature on e-government, transparency, and corruption. The first part of this Chapter reviewed two differing approaches to the individual who engages in corruption, clarifying that one approach (the mindful rationality) has been more dominant than the other (the mindless approach, or bounded rationality). In other words, it has been the former which has driven much of anti-corruption efforts. Thus, according to this approach, in order to curb corruption, one must raise costs of engaging in such acts and enhance visibility of these actors’ actions via transparency.

The result has been an increase in investments in e-government and transparency in order to heed such calls to action. However, as noted, such investments have adopted a technological deterministic view to technology, overlooking social aspects of the setting in which these technologies are deployed. To counter such a deterministic view on technology, studies adopting

a socio-technical view have become more prevalent in the field. However, with regards to transparency, these are still minority voices and certain aspects of transparency have remained overlooked.

This Chapter then presented a discussion on how transparency can be conceptualized in an alternative manner in order to facilitate comparison between studies and view where exactly the gaps lie. As a result, it was identified that the "creation" phase of information in the transparency model presented has been severely overlooked. This will therefore be the way this research will be approached: studying how information is created in order to assess its actual impact on corruption. Heeding to calls from Heeks and Mathisen (2012: 535), who affirm that there are "far too few resources [that] are spent on learning from interventions, and little is understood about the factors that make them happen", this thesis seeks to do precisely that: conduct an in-depth analysis of how the creation of information takes place within a governmental agency, and learn what the factors are that impact this dynamic.

Complementing the socio-technical approach adopted in regards to transparency, a bounded rationality approach to corruption will be undertaken. This is due to the fact that it has been the mindful rationality approach which has driven technological deterministic investments in transparency. It thus seems appropriate to adopt a more cognitive and less deterministic approach to corruption as well. As such, this thesis will adopt Palmer's (2008: 108) definition which determines that:

> *"Organizational wrongdoing consists of behavior perpetrated by organizational officials (i.e. directors, managers, and/or employees) in the course of fulfilling their organizational roles that is judged by social control agents (i.e. prosecutors, regulatory agency officials, judges, journalists etc.) to be illegal, unethical, or socially irresponsible. Collective organizational wrongdoing involves the sustained coordination of multiple organizational participants".*

In summary, this research will take a socio-technical approach on transparency in order to comprehend how information is created at a micro-level. The next Chapter will discuss the theoretical approach that has been adopted in this study.

CHAPTER 3
THEORETICAL FRAMEWORK

3.1 Introduction

As discussed in the previous Chapter, for the purposes of this research, transparency is theorized as an information flow, which comprises three distinct stages: creation of information, publication and public access of information.

The creation stage can be understood as an information system, one which comprises both social forces as well as a technical base through which information propagates until it reaches its final state of presentation on the Transparency Portal. As such, transparency systems can and should be theorized as socio-technical systems, since they implicate in change and disruption in organizations in ways that affect both social and technological forces. Heeks (2006: 4) corroborates this idea, as previously discussed, by affirming that the management of e-government systems goes beyond the management of technical aspects but should also consider social ones.

How information is produced, from the perspective of those at the forefront of such processes, actively creating it is, as identified in the previous chapter, an area that has been heavily overlooked by scholars. Hence, it has become the focus of this thesis with the intent of bridging this gap, by providing an in-depth account of how such processes take place and, in turn, provide a meaningful contribution to studies in the e-government field.

This Chapter is therefore aimed at delineating the theoretical frameworks that will support data collection and analysis. As Merriam (1998) determined, a theoretical framework serves as the

scaffolding of the study, from which the research questions will be established. This will be reviewed here.

This Chapter is structured as follows: section 3.2 will present a discussion on distributed cognition theory, one of the theoretical frameworks adopted. At the end of that section, how this theory applies to this research and two research questions will be presented. Section 3.3 will then discuss moral disengagement theory, the second theoretical framework adopted. At the end of the section, one further research question will be presented, in addition to how this theoretical framework will be adopted. Section 3.4 will focus on the meaningfulness of this study, whilst section 3.5 will end with some concluding remarks.

3.2 A Socio-Technical Approach

Amongst the many theories that are available – such as structuration theory, activity theory, and situated action – one seemed to be a particularly good fit for this study: distributed cognition.

As established in Chapter 2, transparency can be conceived as a socio-technical system. Socio-technicality, however, is not a theory *per se*, but rather an approach. To this extent, Luna-Reyes et al. (2005: 94) affirm that the socio-technical approach is the result of other theories which together inform its approach: "structuration theory, institutional theory, social construction, and theories of organizational change". Thus, an actual theoretical framework must be chosen, one which aligns with the socio-technical vision, which emphasizes both technical and social aspects.

Halverson (2002) suggests that a theory can only be considered useful to a study if it possesses four important attributes: descriptive power, rhetorical power, inferential power, and application.

The first attribute, descriptive power, refers to how a theory can aid a researcher in making sense of the world and describing it. The second attribute, rhetorical power, is in reference to whether it provides a conceptual structure which aids in mapping the real world. The third aspect Halverson (2002) lists is inferential power. As she explains, "we do want a theory to help us make inferences. In some cases, those inferences may be about phenomena that we have not yet understood sufficiently to know where or how to look" (Halverson 2002: 245). The fourth attribute, application, refers to how the theory can be applied to the real world.

One such theory that she herself suggests and which fits that criteria is distributed cognition (DCog). Due to its natural fit to my line of inquiry, this was the theoretical framework chosen and will be reviewed in the next section of this Chapter.

3.2.1 Distributed Cognition (DCog)

Devised by Edwin Hutchins in the 1990s (Flor and Hutchins 1992; Hutchins and Klausen 1992), DCog emphasizes the role of cognition, though not constrained to the individual mind, but rather extended and expanded to encompass both the social and cultural contexts. It draws influence from Vygotsky's Social Development Theory[1]. As Hutchins (2000: 5) explains: "He [Vygotsky] argued that every high-level cognitive function appears twice: first as an interpsychological process and only later as an intrapsychological process. The new functional system inside the child is brought into existence in the interaction of the child with others (typically adults) and with artifacts". Based on that idea, Hutchins (1995) conceived the notion that cognitive

[1] Lev Vygotsky's Social Development Theory is considered one of the foundations of constructivism. It establishes, among other things, that consciousness and cognition are the result of social interaction. As such, throughout his work, his focus was on the connections between individuals and their socio-cultural context (Vygotsky 1980; Crawford 1996).

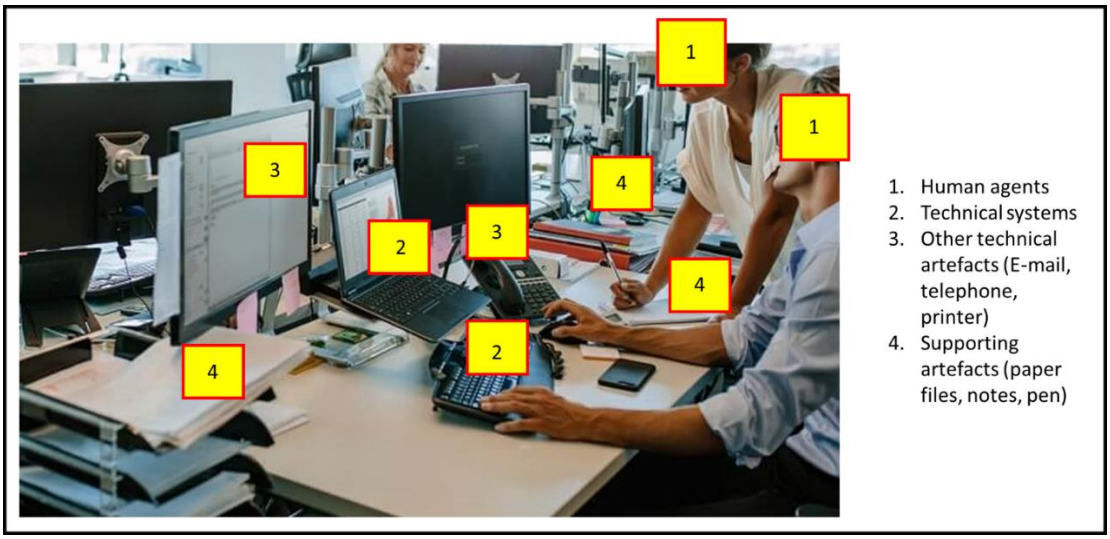
processes are not only constrained to an individual mind but also take place in interaction with others. Hutchins (1995) would go on to develop his study on a navigational system and develop the concept of "distributed cognition", borrowing from traditional cognitive science concepts such as representations and processes, and applying them to social sciences concepts, such as division of labor and organizational learning (Rogers 2005). He defines cognitive processes "to be those that are involved in memory, decision making, inference, reasoning, learning, and so on" (Hutchins 2000: 1).

Distributed cognition, as a theoretical framework, is focused on studying the cognitive distribution of work activities between individuals and artefacts as they interact in a particular environment. Rogers and Ellis (1994: 122) posit that the aim of DCog is "to explain cognitive activities as embodied and situated within the work settings in which they occur. By explicitly adopting this broad focus, the distributed cognition approach provides a theoretical and methodological framework for analyzing complex, socially distributed work activities of which a diversity of technological artifacts and other tools are an indispensable part".

An aspect that should be highlighted about DCog is how it approaches the cognitive architecture and its focus on the ways information flows in a particular context. Thus, an activity such as the creation of transparency (or information) could be analyzed in terms of how it is distributed across a system, which comprises an array of agents, both human and technical. The focus in DCog is therefore in the interplay between agents, and how cognitive processes are shared between them. Figure 3.1 depicts how cognition expands across individuals and artefacts. It captures a moment in the workplace, whereby the different information sources (the computer, the phone, the technical systems within the computer, documents, the personal interactions) work in tandem and share the distribution of cognition. DCog therefore does not emphasize the individual

over the artefacts, as both will shape the cognitive process in some way. To this extent, Hollan et al. (2000: 175) affirm that "distributed cognition refers to a perspective on all cognition, rather than a particular kind of cognition".

Figure 3.1 – Distributed Cognition in the Workplace



The distributed cognitive theory establishes two important principles (Hollan et al. 2000; Hutchins 1995):

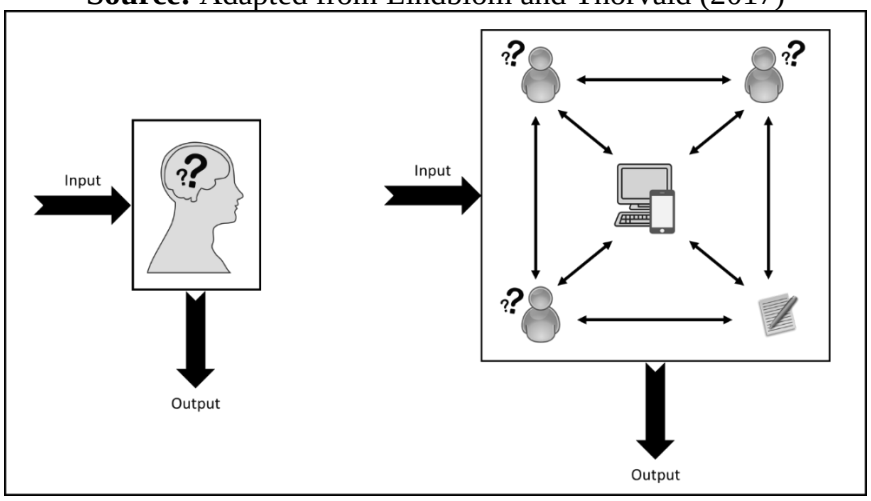
- The unit of analysis should be the cognitive system. As Hollan et al. (2000: 175) affirm, DCog looks for processes wherever they may occur, on the basis of the functional relationships of the elements". In other words, a group of people and artefacts who do not interact do not constitute a cognitive system (Rogers and Ellis 1994).
- Cognitive processes may involve various processes of coordination, such as between members of a social group and between people and artefacts. There is also a temporal

aspect that may warrant consideration, as the coordination between all these elements may not necessarily occur all at once, but in incremental stages through time.

Zhang et al. 2002 establish that the unit of analysis comprises of a "triples rule": individual, artefact, and context. In addition, the various coordinating mechanisms need to be taken into account. In this regard, it is a shift away from the traditional approach to cognition which establishes that cognitive processes are constrained to a single user (Nilsson et al. 2012: 61). Figure 3.2 represents that difference. On the one hand, there is a single individual's perspective of the world. On the other, there is the unit of analysis as established by DCog which comprises the entire cognitive system. To this extent, Lindblom and Thorvald (2017: 63) explain that "DCog offers a shift from studying individual cognizers to studying the whole functional system, including the people, the tools and artefacts that they use in order to perform their work and cognitive activities". DCog thus expands the focus of cognition and approaches the concept of cognition as distributed across people, artefacts and the environment. In other words, cognition is no longer characterized as bound to an individual's mind; it exists beyond the mind.

Sharp and Robinson (2006: 2) argue that DCog provides a unifying approach to studying socially complex work situations that pulls together different disciplines that have traditionally studied such phenomena, i.e. the cognitive, social and organizational sciences. The framework, therefore, supports analysis of a situation that takes a more holistic view of the work and how information propagates through the system.

Figure 3.2 – Representation of Traditional Cognitive vs Distributed Cognitive
Source: Adapted from Lindblom and Thorvald (2017)



In terms of research enquiry, what this means is that it is not enough to study people individually. Instead, it is necessary to comprehend how they interact and are influenced by one another. The focus is on the interaction, not on the individual, both amongst individuals and in relation to the artefacts. Likewise, to understand a transparency system, it is necessary to understand the human agents involved as a social group, in addition to how they relate to the technical artifact, both how they shape it and are constrained by it and its various rules of processing. Moreover, it is also of interest how agents – both technical and human – align within a distributed process. That is, how tasks are organized and shared. In that regard, the depiction to the right of Figure 3.2 perfectly represents how government officials, in tandem with artefacts, represent a cognitive system. The output of this interaction will be the information displayed on the Transparency Portal.

Another important aspect concerns how artefacts are studied. Both people and artefacts are considered agents within a cognitively distributed system. That means that, like individuals, artefacts are considered in relation to their human counterparts. It is necessary to understand the

properties of such artefacts insofar as the role they play in shaping information flows. Hence, artefacts are not blank slates, rather they possess innate properties which will shape the cognitive system in ways which must be understood (Nardi 1996).

DCog uses the same theoretical language for people and artefacts. That does not mean however that both are treated equally. To this extent, Halverson (2002: 247) affirms that "This common language has led others to critique the theory for assuming people are equated with artifacts in some ways that denies their humanity. This is, in fact, not the case". Instead, the weight each will carry – human or artefact – will be relative to the system in which they are embedded in. As affirmed before, it is this dynamic that is of special interest.

Clegg (1994: 460) affirms that "Organizations are also cultural systems of shared meanings and understandings". That is not to say, however, that organizations are merely the sum of different cognitive agents. Quite the contrary: when placed together, the aggregate sum will be transformed in ways which must be analyzed in-depth in order to be understood. Hutchins (1991, *in* Nardi 1996: 39), supports this notion when he affirms that "because the system is not relative to an individual but to a distributed collection of interacting people and artifacts, we cannot understand how a system achieves its goal by understanding the 'the properties of the individuals alone, no matter how detailed the knowledge of the properties of those individuals might be".

In distributed cognition, the core focus is on the general flow, propagation and transformation of information in the distributed system. This, according to Lindblom and Thorvald (2017: 66) allows the researcher to clearly identify issues such as "what happens when the information flow breaks down or when alternative ways of handling the information flow emerge in the system. . . Accordingly, different workarounds (i.e. the discrepancy between the prescribed work practice and the current work practice) that humans develop when dealing with various

demands during work performance become salient through a proper DCog analysis". These "workarounds" are therefore conceptualized as "breakdowns" since the outcome of such actions directly impacts the flow of information and the sequence of tasks (Sharp and Robinson 2006; Galliers et al. 2007).

As applied to this study, it could be said that every time participants diverge from what constitutes their regular work practice, provoking a misrepresentation or a rupture of the information flow, a breakdown has occurred. Previous studies, such as the one by Heeks (1999), posit that in a corrupt work environment, the deployment of ICTs may implicate in individuals deviating from their regular work practices in order to conceal their illicit activities. In other words, individuals who engage in corruption cause a breakdown in the information flow. Regarding transparency specifically, and the creation of information by civil servants, the idea that information is distorted, thus causing a breakdown in the information flow, seems plausible and should merit the attention of the researcher. In this regard, Sharp and Robinson's (2006: 4) definition of a breakdown seems particularly well suited, i.e. they are considered "potential failures in communication or information flows that will impair the system's performance or prevent the system from achieving its goals".

Rogers (2005) affirms that, in addition to breakdowns, other instances merit the attention of the researcher, such as the distributed problem-solving, coordinating mechanisms such as rules and procedures, the ways in which communication takes place, and how knowledge is shared amongst individuals.

Nardi (1996: 46) notes that this is a very different approach to that of a technology deterministic approach, in that "they ignore the subjective". This dominant 'rationalist tradition' in information systems, according to Winograd and Flores (1986), should be challenged, with more

'cognitive science' research needed. As Shane (2012: 12) affirms, "if technology were the key to democratic success, then we would now be living in an age in which we all, without regard to class or social status, would have unprecedented opportunities to achieve our personal aspirations and to shape the collective lives of the communities in which we live". Hence, this aspect, the human component, cannot be disregarded.

There has been some recognition of the importance of cognitive processes in information systems. Orlikowski (1992), for example, acknowledges both cognitive and organizational elements in her studies regarding changes in work practices resulting from the implementation of a new technology. However, such recognition is still overlooked in most studies. Moreover, even when mentioned, they fail to consider the cognitive processes that are *inherent* to tasks within an expanded work environment encompassing other individuals and artefacts, as opposed to individual cognitions (Rogers and Ellis 1994: 121). When it comes to governmental institutions, these are highly complex environments, as will be reviewed in Chapter 5. Such interplay of activities and people cannot be overlooked if one is to gain an in-depth understanding of how information is created within a governmental institution.

DCog has been applied to a number of different settings: Hutchins (1995) who pioneered the model by applying it to U.S. Navy's navigation system; Rogers (1992) who studied engineer practice; Halverston (1995) who applied it to air traffic control; to name a few. It is also particularly suited for workplace studies (Hollan et al. 2000). Such disparate settings reflect its wide-ranging application. Thus, though it has never been applied in the context of a governmental agency, its diverse ranging applicability, coupled with its interest in "work systems" makes DCog a suitable approach to this study. Moreover, government agencies are information-intensive. As Heeks (2000: 197) observes, "government has been, and still remains, the single largest collector, user,

holder and producer of information". DCog's emphasis in the information system also make it an ideal fit for this study.

One piece of criticism to the DCog theoretical framework, however, regards its abstractedness. Berndt et al. (2014: 432) highlight that "most accounts of DCog omit details of the process by which data were gathered, structured, or analyzed, making it difficult to follow or replicate". To counter this, methods that facilitate the application of DCog in practice and aid in articulating DCog principles have been developed, such as the Distributed Cognition for Teamwork framework (DiCoT) by Furniss and Blandford (2006). The adoption of DiCoT as a methodological framework will be discussed in the next section.

3.2.3 Distributed Cognition for Teamwork (DiCoT)

DiCoT was developed by Furniss and Blandford (2006) as a semi-structured way of applying DCog principles to research, thus facilitating and aiding in data gathering and analysis. As they explain:

> *"DiCoT is an approach to facilitate the application of DC (Distributed Cognition) theory to teamwork settings. DC provides a theoretical lens in analysis which revolves around the idea of a 'complex computational system'. These systems are complex because they involve physical, social and representational factors that impact on the system's performance; they are computational because they are concerned with the propagation and transformation of information; and they are systems because they involve many interacting elements" (Furniss and Blandford 2010: 1).*

DiCoT builds on DCog literature in order to build models which reflect different aspects of the "complex computational system" (see Appendix II for full details). Each model has DCog principles associated with it, which act as focal points for the researcher, guiding him/her through

the analysis. Each one is interrelated, highlighting different aspects of the system. Together, they paint a clear picture of how the system works, highlighting how the system interacts and functions. In addition, it aids in identifying points of breakdown and issues that impact the information flows. The five models are: physical layout, artefacts, information flow, social structures, and evolutionary.

The physical layout model addresses the physical organization of the work setting where cognitive processes take place. It is concerned in addressing the different physical structures that may have an impact on cognitive processes, such as spatial arrangement (e.g. the disposition of desks), barriers and walls that may inhibit communication (or indeed facilitate it), disposition of equipment. The DCog principles associated with this model are: space and cognition, perceptual, naturalness, subtle bodily supports, situation awareness, horizon of observation, and arrangement of equipment.

The artefact model is concerned with inherent properties of the artefacts that aid in the information flow and through which cognition is distributed. Artefacts are considered an integral part of the system. DCog principles associated with this model are: mediating artefacts, creating scaffolding, representation – goal parity, coordination of resources.

The information flow model, considered by Furniss and Blandford (2006) as the most representative of how cognitive processes are distributed, concerns itself with highlighting aspects regarding the propagation and transformation of information. It addresses properties of the communication channels, whether informal or formal, and what media is used to facilitate the flow of information. DCog principles associated with this model are information movement, information transformation, information hubs, buffering, communication bandwidth, informal communication, and behavioral trigger factors.

The social structure model highlights the responsibilities of each individual in this system and how cognition is distributed between them. It also addresses aspects such as social relationships, distribution of knowledge, and division of tasks and goals. Admittedly one of the least developed models in DiCoT (Berndt et al. 2014), it has only two DCog principles associated with it: social structure and goal structure, and socially distributed properties of cognition.

The last model established by Furniss and Blandford (2006) is the evolutionary model. Like the social structures model, it is also somewhat underdeveloped. It focuses on aspects concerning how the system has evolved over time in order to understand why work is arranged the way it is. The DCog principles associated with it are: social structures and cultural heritage, and expert coupling.

Structuring data through these models allows the researcher to create diagrammatical and narrative representations of the unit of analysis. In this regard, four benefits of adopting DiCoT as a methodological framework can be highlighted (Furniss and Blandford 2010):

1. It provides an understanding of the mechanics of the system, giving an insight into what makes it work;
2. It provides a deeper conceptual insight into what constitutes the most important elements of the socio-technical system;
3. It provides design considerations, i.e. if the system were to be redesigned, what would be the issues to address;
4. It provides the tools needed to reflect on design considerations.

In summary, DiCoT "provides a structure for organizing information, steps to engage with the context, and a lens in which to view the analysis" (Furniss and Blandford 2010: 2); see Table 3.1 for an overview of the methodological framework. An aspect that needs to be highlighted is the differentiation between DCog and DiCoT. DCog is the theoretical framework, whilst DiCoT is a methodological framework which draws principles from the DCog theory in order to provide a structured and meaningful way through which engage with the data and perform the analysis. In other words, it aids in the application of the theory. Hence, DiCoT does not replace DCog. Quite the contrary, in order to apply DiCoT effectively, a deep knowledge of DCog and its principles is required. Moreover, the interplay between humans and artefacts remains the unit of analysis.

Table 3.1 – DiCoT Methodological Framework
Source: Furniss and Blandford (2010)

Purpose	Understanding the propagation and transformation of information at work.
Related theory	Used to facilitate the application of Distributed Cognition (DCog).
Data gathering	Mainly observations and interviews, in addition to documents.
Models developed in analysis	Information flow Physical Artefact Social Evolutionary
Subsequent analysis	Constructing account of work in terms of DCog concepts and assessment against DCog principles.

3.2.4 Discussion

DCog adopts a socio-technical approach to information systems, emphasizing the cognitive element of it. Thus, in DCog, cognition is distributed between agents who actively engage in a shared space, working in tandem to produce an outcome. This definition represents perfectly the process of creating transparency, which consists of civil servants working both with each other and the technical systems deployed, the output of which will be information which will be publicized through the Transparency Portal so that civic society can access it and interact with it (see Figure 3.3). The interplay between human agents and artefacts within a governmental agency, whereby cognitive systems are shared and through which information propagates thus constitute the unit of analysis in this study.

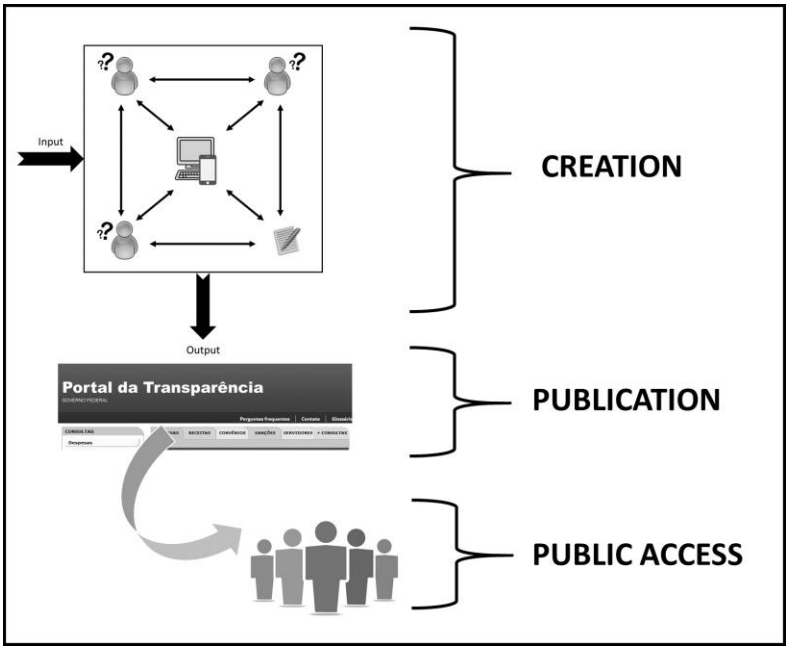
As discussed, the one downfall of adopting DCog as a framework is its difficulty in applying it to the case in question, which would have made it difficult for others to replicate it. As a form of addressing that, the DiCoT methodological framework was adopted. This will give the research a clear structure from which to analyze data and reach definitive conclusions.

It was also discussed that, in distributed cognition, the core focus is the propagation and transformation of information in the distributed cognitive system. This, however, is subject to breakdowns, such as work-arounds and errors, which may or may not be intentional, but will certainly bear an impact on the information produced. Since the cognitive system that will be studied is one that comprises human agents who behave unethically and engage in acts of wrongdoing, it seems plausible to assume that such breakdowns do in fact occur based on previous research by Heeks (1999). An area of interest, therefore, is to investigate in which ways such breakdowns affect the information that is produced. Thus, based on the discussion presented so far, two research questions have been proposed:

R1: How are cognitive processes distributed between agents (human and artefact) at Agency X?

R2: How do breakdowns impact the information system at Agency X?

Figure 3.3 – The Transparency System Under a Distributed Cognitive Perspective



Agency X, as will be presented in Chapter 4, is the *locus* of the unit of analysis. It refers to a governmental agency within the structure of the Brazilian federal government. Its main mission is to aid in the procurement of services and supplies, fielding purchase requests from various other agencies within the particular Ministry whose authority they are under. Such processes result in spending, and therefore in budget execution, information which must then however be published on the Transparency Portal. It is also an agency where ongoing acts of corruption were identified.

In order to study the issue of corruption and measure its impact on the distributed cognitive system, it seems appropriate to adopt a second theoretical framework which can aid in addressing this. In this instance, Bandura's (1986) moral disengagement theoretical framework was adopted. One of the reasons for this was due to its compatibility with DCog. This will be reviewed in the next section of this chapter.

3.3 Moral Disengagement

Albert Bandura proposed the moral agency concept in the 1980s as part of his social cognitive theory which, like DCog, derives from cognitive psychology. His concept of moral agency is used to explain the adherence of individuals to moral principles. As Bandura (2016: 1) explains, "In the development of a moral self, individuals adopt standards of right and wrong that are guides and deterrents for conduct. They do things that give them satisfaction and a sense of self-worth. They refrain from behaving in ways that violate their moral standard because such conduct will bring self-condemnation". Thus, in developing a moral self, people establish standards of right and wrong. Through a process of self-regulatory behavior, individuals monitor their conduct and avoid violating their moral codes in order to avoid the feeling of distress that would ensue as a result.

However, self-regulatory mechanisms are not always activated. And as Bandura (2002: 102) explains, "there are many psycho-social maneuvers by which moral self-sanctions can be disengaged". This process of disengaging self-regulatory behavior is thus the basis for Bandura's moral disengagement theory.

Moral disengagement (MD) is the act of reframing one's actions "in ways which downplay their ethical content or import, thus suspending self-regulatory processes that socio-cognitive theory suggests govern individual moral behavior" (Moore 2008: 130). As Moore (2008) explains, moral disengagement has been used predominantly to predict anti-social behavior. In his latest publication, Bandura (2016) goes so far as to present how it may be applied to a series of activities such as terrorism, the gun industry, and environmental sustainability. Bandura does introduce the concept to the organizational environment but does so in a limited way. To date, Moore (2008) has been the only one to more extensively discuss how it may be applied to explain corrupt behavior and intent in organizations.

The basis of MD theory is explaining why and how people engage in deviant behavior without experiencing remorse or guilt. Rooted in the social cognitive theory of human agency (Bandura 1986), MD explains the process through which people disengage their moral mechanisms (Herath et al. 2017: 1137).

MD consists of an extension of the social cognitive theory of human agency (Bandura 2002; 2016). As Detert et al. (2008: 375) explain, "social cognitive theory offers an agentic perspective on human behavior whereby individuals exercise control over their own thoughts and behaviors through self-regulatory processes. . . According to social cognitive theory, moral disengagement is governed by a self-regulatory system that includes self-monitoring of one's conduct as well as self-reaction to that conduct in light of internal moral standards".

Bandura (2016) explains that self-regulatory processes are governed in two ways. The first is the exercise of restraint, that is, refraining from engaging in deviant behavior even if chances of detection are low. The second refers to the feeling of guilt, remorse and self-criticism for having

violated their internal moral code. Both these processes are the result of self-control. In society today, social norms are regulated by external social control. However, for Bandura (1986), when self-sanctions have eroded, then social control carries little weight.

Most people will have developed a high standard of moral behavior that will act as a self-sanctioning mechanism. To this extent, Detert et al. (2008: 375) add that "these standards guide good behavior and deter bad because individuals use their personal standards to anticipate, monitor, and judge their own actions. . . Thus, individuals usually behave in ways that are consistent with their internal moral standards because they anticipate their own positive and negative evaluations of possible conduct choices". But self-regulation can be deactivated selectively and the mechanism through which that takes place is moral disengagement.

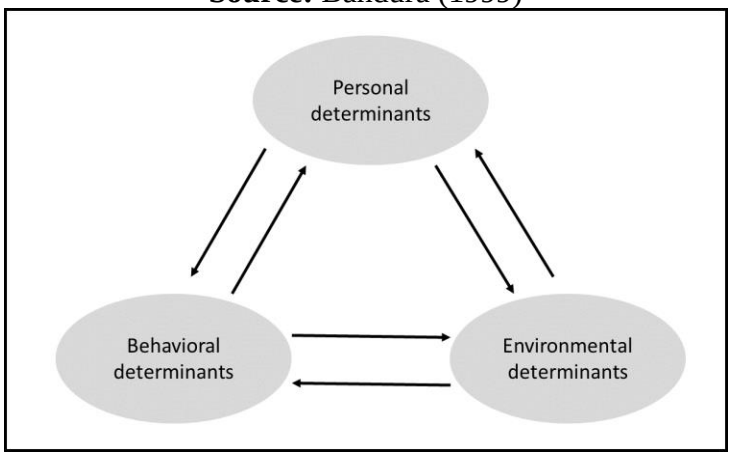
This "selective" quality to MD needs to be highlighted. What this means is that the same individual may adopt different standards of morality depending on context. Bandura (2016: 27) notes that "even the same individuals may adhere to different moral standards in different settings and domains". Moore (2008: 131) adds that "Research on business ethics has been quite consistent in finding that individuals segment their moral lives, applying a different set of ethical standards in different contexts". Thus, it is possible to affirm that MD is socially learned.

To understand why and how, it is necessary to refer back to Bandura's (1986) social cognitive theory and his proposal on human behavior. As he explains, "human functioning is a product of the interplay of personal influences, the behavior individuals engage in, and the environmental influences that impinge on them" (Bandura 2016: 6). This interplay, which he refers to as triadic reciprocal causation (Bandura 1986; 1996; 1999; 2016) (see Figure 3.4), rests on three pillars (personal determinants, behavioral determinants, and environmental determinants) which

influence one another in a bi-directional way, in other words, “as interacting determinants that influence each other” (Wood and Bandura 1989: 362).

Personal determinants refer to “biological endowment and intrapsychic influences in the form of competencies, belief systems, self-conceptions, emotional states, goals, attitudes, and values” (Bandura 2016: 6). The second determinant refers to behavioral patterns and how behavior is performed (physical, social, and emotional). The third determinant is in reference to environmental influences. As Bandura (1999: 23) affirms, the “environment is not a monolithic entity” and exerts its presence in people’s lives whether they like it or not. However, they do have a certain degree of freedom in how they construe it and react to it. In other words, different people may experience the same reality in different ways based on their construal of it.

Figure 3.4 – Triadic Reciprocal Causation
Source: Bandura (1999)



This means that people have some influence in shaping events in their lives. However, there is no absolute freedom and individuals will be constricted in activities and actions. In other

words, social structures will impose constraints, in addition to providing resources and opportunities. As such, "in the theory of triadic reciprocal causation, sociostructural and personal determinants are treated as co-factors within a unified causal structure" (Bandura 1999: 26). Linking this back to MD mechanisms, it is possible to ascertain that "people do not operate as autonomous moral agents, impervious to the social realities in which they are enmeshed. In keeping with the socially situated causal structure, social cognitive theory adopts an interactionist perspective on morality" (Bandura 2016: 10). In this regard, Bandura (1986) claims that people may behave differently in different settings, in accordance with the codes of conduct of that particular environment. As a result, they may selectively disengage morally depending on the context.

Human agency takes place in three ways: individual, proxy, and collective. In individual personal agency, human beings exercise direct control with no external influence. In proxy agency, they delegate control to someone else. In collective agency, people will work together to shape their future. In this regard, Bandura (2016: 13) affirms that "there is no such thing as a disembodied group mind that does the reasoning, and the acting. A group operates through the behavior of its members. However, a group's belief is not simply the sum of individual members' beliefs. Interactivity produces emergent effects".

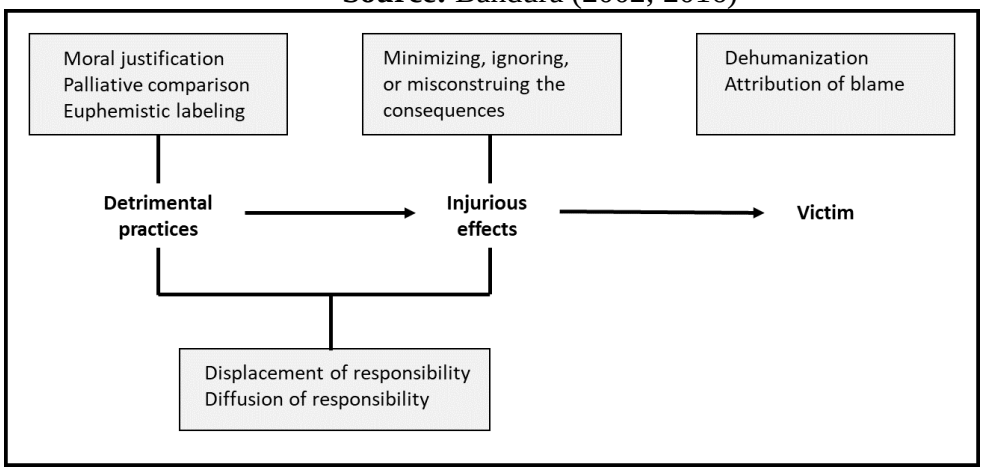
MD operates at all three levels of agency, according to Bandura (1999; 2016). In organizations, proxy agency is the most common form, whereby individuals confer the responsibility of their activities to others, either the group or someone above in the chain of command. To this extent, Moore et al. (2012: 11) affirm that:

> *"the workplace provides ample opportunities for moral disengagement: organizations tend to be hierarchical, providing opportunities for the displacement of responsibility; work is often undertaken within teams, providing opportunities for the diffusion of*

responsibility; organizational membership automatically defines the boundaries of an in-group, providing opportunities for moral justification (to protect the organization) and the cognitive minimization of consequences of one's action for those who are outside the organization (and thus in an out-group). The propensity to morally disengage might also be particularly damaging in organizational life because work contexts have been documented as triggering amoral frames of judgement".

In the quote above, Moore et al. (2012) reference displacement of responsibility, diffusion of responsibility, moral justification, and minimization of consequences. These refer to the mechanisms through which moral disengagement is activated. There are eight in total, which are described below (see Figure 3.5):

Figure 3.5 – Moral Disengagement Mechanisms
Source: Bandura (2002; 2016)



1. Moral justification: the act of sanctifying harmful means by reframing them as worthy social and moral purposes.
2. Advantageous (or palliative) comparison: comparing or contrasting harmful activities to give it the appearance of own action being benign or even altruistic.

3. Euphemistic labeling: the use of sanitizing and convoluted language to disguise the actual content of actions.
4. Displacement of responsibility: the act of evading personal accountability for harmful conduct by displacing responsibility to another in a position of authority.
5. Diffusion of responsibility: attributing actions to group behavior thereby absolving both self and group for behavior.
6. Minimization (or distortion of consequences): the act of disregarding, minimizing, distorting, or even disputing the harmful effects of their actions.
7. Dehumanization: the act of divesting victims of their human qualities.
8. Attribution of blame: the act of blaming victims for their own negative, deviant behavior.

The eight mechanisms described above represent a way through which individuals can reframe their actions in more positive ways, or at the very least, downplay the gravity of such actions, thus evading any feelings of self-condemnation. Important to note that such changes may not happen instantly. In the ambience of a work environment, for example, change will most likely be progressive. In this regard, Bandura (2002: 110) explains that "change is achieved by progressive disengagement of self-censure. … The continuing interplay between moral thought, affect, action and its social reception is personally transformative. People may not even recognize the changes they may have undergone as a moral self". As a result, the actions in which they engage in will seem normalized and any ill effect will be neutralized (Kish-Gephart et al. 2013).

Moreover, as Bandura (2016: 204) explains, individuals are driven to act by social stigma. Warren and Smith-Crowe (2008: 2) complement this by affirming that ". . . "embarrassment", the

distress we experience when we transgress in the eyes of others is a key factor in employee's moral judgements about right and wrong. Embarrassment is both a "moral" emotion as well as a "social" one. . . but unlike other moral emotions, embarrassment occurs almost exclusively in the presence of others". This notion further explains why individuals are influenced to morally disengage, as embarrassment causes distress but social approval brings about the feeling of satisfaction (Bandura 1986).

In summary, MD mechanisms allow individuals to compromise their moral standards whilst evading feelings of self-censure or self-condemnation, and their sense of moral integrity. In addition, activation and disengagement of self-sanctions are selective, which allows individuals to behave by different codes of conduct in different environments. For example, a person may behave unethically in their work environment, but be a responsible spouse, perform charitable activities etc. What will determine this variation will be their social environments and external influences. As Bandura notes (2016: 28), individuals "are especially influenced by the evaluative reactions of those to whom they are emotionally attached and whose views they value". In the workplace, this might be a manager or an esteemed colleague.

Moral disengagement mechanisms are directly related to unethical decision-making and wrongdoing (Moore et al. 2012). Identifying the existence of these mechanisms within a work environment and identifying in which ways it manifests itself (i.e. the types of mechanisms, in accordance with the eight delineated by Bandura) will (1) confirm individuals' propensity to engage in corrupt behavior, and (2) aid in understanding what the impact of this is for the distributed cognitive system. Regarding Agency X specifically, and the unit of analysis which has already been identified and its role in producing information, such understanding will hopefully

clarify the persistence of wrongdoing and unethical decision-making in government institutions and in what ways this impacts information processing and propagation.

3.3.1 Applying Moral Disengagement Theory to Determine Unethical Behavior

According to Burke and Cooper (2009), individuals are more likely to engage in unethical decisions when levels of moral disengagement are high. In this regard, Kish-Gephart et al. (2013: 268) affirm that "prior research has demonstrated a relationship between morally disengaged thinking and unethical behavior". Moore et al. (2012: 2) complement this notion by affirming that "an important additional driver of unethical behavior is an individual's propensity to morally disengage". Confirming the presence of moral disengagement mechanisms within members of an organization means will confirm these individuals' propensity to engage in unethical decision-making and wrongdoing. In order to do so, Moore et al.'s (2012) Moral Disengagement Measure will be applied (see Appendix III) to all participants interviewed.

Moore et al. (2012) explain that the measure they elaborated was tested in different environments amongst different samples, though their focus was on empirically measuring levels of moral disengagement within work contexts. It can therefore "can be administered and used generally – that is, with any adult sample in any type of context", making it a straightforward way to confirm that individuals at Agency X are in fact morally disengaged. As had already been presented (and will be discussed in much more detail throughout the remainder of this thesis), it has already been identified that acts of corruption take place at Agency X, hence why they have been chosen as the *locus* for the unit of analysis established. The question though remains whether such acts are constrained to a few, or whether it enjoys a much more widespread support.

Moreover, it is important to identify how it manifests itself. In order to do so, and to complement the data obtained via Moore et al.'s (2012) empirical measure, qualitative data obtained via interviews, observation, and documents (a full discussion on data gathering will be presented in Chapter 4) will be coded for MD mechanisms in accordance with Bandura's (2006) *Manual for Coding Modes of Moral Disengagement*. As White et al. (2009: 46) explain, Bandura's manual "includes formal definitions of each of the mechanisms and exemplars representing the different ways in which moral disengagement is manifested" (see Appendix IV).

The combination of both data collection methods should lead to a greater understanding of the cognitive processes individuals at Agency X engage in, and the effects of this on the distributed cognitive system.

3.3.2 Discussion

Scott (1995: xviii) affirms that "Cognitive systems control behavior by controlling our conception of what the world is and what kinds of action can be taken by what types of actors". This process is not, however, unilateral. On the contrary, just as we construe reality through our own cognitive processes, we are constrained by existing sociostructural elements (Bandura 1999). In addition, Bandura (2016: 10) explains that socially approved conducts are a source of "self-satisfaction". Thus, our immediate social groups matter, which implicates in shared beliefs and cognitive systems.

As established in Section 3.2.4, such is the case in work environments, whereby cognition is distributed between agents who actively engage in a shared space. Moral disengagement is a cognitive mechanism through which individuals gradually "switch off" their moral codes in order

to behave unethically without feeling distress or self-condemnation. According to Bandura (2002), there are a total of eight mechanisms which individuals may use in order to disengage. Though all of these types might be present within an environment, it might be the case that a few are more present than others depending on context. For example, if the displacement of responsibility is particularly prevalent, this might reveal how hierarchy is viewed and observed. Such is the case in the military and in organizations. In terrorism and counterterrorism, on the other hand, Bandura (2016) notes that dehumanization, minimization of harmful effects, and attribution of blame are the most present disengagement mechanisms. Examining the types of mechanisms that are most prevalent within an environment will thus allow for an understanding of the social forces in place.

Moreover, it stands to reason that the presence of such mechanisms within a distributed cognitive system would impact the propagation of information in some way. Within a distributed cognitive system, the focus is on the information, and how it flows and is transformed. The output of the cognitive system at Agency X is information which is publicized through the Transparency Portal. As discussed previously, workarounds or deviations from norms which bear an impact on information flow constitute a "breakdown" in information. Deviant actions which implicate in the information being distorted in support of such actions can be considered a breakdown. As a result therefore of this discussion and reflection, the following research question was proposed:

R3: How do moral disengagement mechanisms facilitate the breakdown of cognition systems?

If breakdowns do occur as a result of wrongdoing, it is probable that moral disengagement mechanisms facilitated that process in some way. To this extent, understanding in what ways might

lead to insights as to why corruption persists even in the face of transparency mechanisms which have been put in place.

3.4 Contribution

This study proposes that transparency be understood as a system which touches upon a range of different stakeholders, both within government and outside it. It also proposes that transparency be conceptualized as an information flow which can be broken down into three distinct phases: creation, publication, and public access. Each phase raises different concerns regarding how to make transparency more effective: at the public access phase, the focus should be on enhancing citizen participation; at the publication phase, the focus is then on the web portal and how to make it accessible and comprehensible; at the creation phase, the focus is on those who are producing the information. Though the public access and publication phases have garnered a high level of attention from scholars, the creation aspect of information still remains under-researched. As reviewed in the previous Chapter, most studies have focused on implementation or how high ranking officials perceive and operate transparency. However, lower level civil servants, particularly those who have no contact with citizens and whose main function is simply to serve as the internal cogs of government, helping the government machine run, have received almost no attention at all, in spite of being one of the largest group of content providers for transparency portals.

In order to study this particular group of people, two theoretical frameworks were adopted: distributed cognition (Hutchins 1995) and moral disengagement (Bandura 1986). Both are rooted in cognitive psychology and are thus compatible. Based on DCog, the work system responsible for

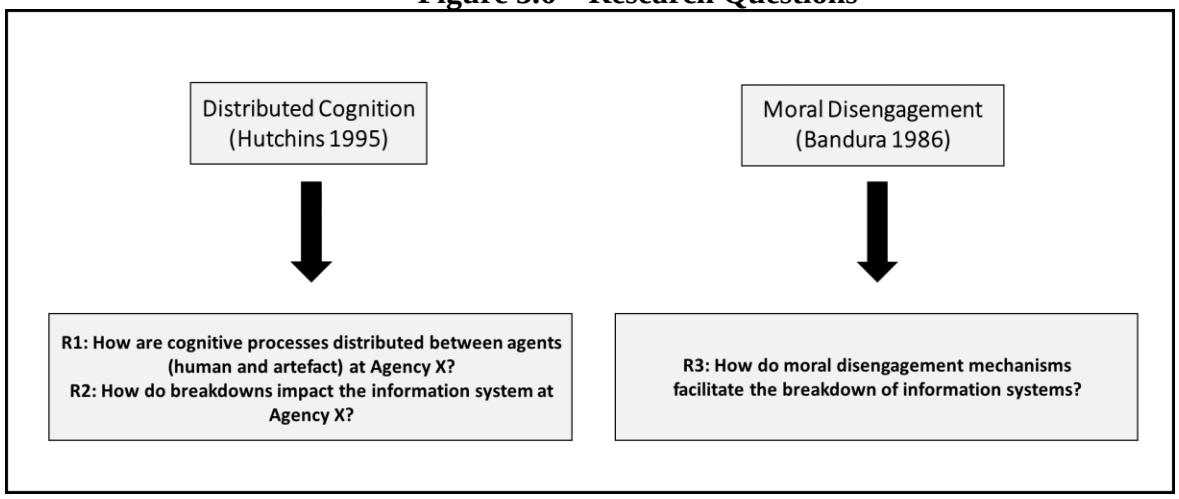
creating information has been conceived as a "cognitive system" which comprises both human agents and artefacts (technical systems, paper files etc.). It is therefore a "distributed" cognitive system since, in accordance with the socio-technical approach adopted, knowledge is not restricted only to the human mind, but rather expanded to artefacts as well. In other words, both human agents and artefacts work in tandem to produce information, each detaining a part of the process, and each reinforcing and restricting each other in different ways.

As a result of this discussion, the first research question was established (see Figure 3.6), which concerns itself with understanding how the cognitive processes are distributed between each of these components. As reviewed, though cognition is distributed, that does not mean that both artefacts and individuals play an equal part. In this regard, understanding what role each member of this system plays will give us an insight as to how the system functions and how information is produced. No study to date has studied transparency in such a way, emphasizing the cognitive aspect of this socio-technical system. Moreover, few have researched the inner workings of this system at such a micro-level. This is thus a novel way of studying transparency, not only in how it is conceptualized but also in how it is researched.

The second research question refers to "breakdowns" in the information flow. As reviewed, breakdowns in the DCog theory are defined as instances which impact the cognitive system, compromising both the flow and quality of the information produced. These may be due to unintentional action, but may also be due to deliberate "work-arounds". In such an information-intensive environment, such as governmental institutions, there is a high likelihood that breakdowns do occur. Hence, the second research question defined was to understand how such breakdowns affect the cognitive system under study.

In order to apply DCog to this study, it was established that the DiCoT methodological framework would be adopted. DiCoT consists of a semi-structured way of applying the DCog theoretical framework to research, drawing on DCog principles to build five different models (physical layout, artefact, information flow, social structure, and evolutionary) which together paint a picture of how the distributed cognitive system under study functions, and how information propagates through it. In doing so, it also aids in identifying breakdowns and the sources of it.

Figure 3.6 – Research Questions



A second line of inquiry was introduced, regarding the study of wrongdoing and unethical behavior. As already discussed, the overarching puzzle driving this research is understanding why transparency has been unable to curb corruption in Brazil (see Chapter 2 for discussion). Prior research has indicated a causal relationship between morally disengaged thinking and unethical behavior (Detert et al. 2008; Moore et al. 2012). Thus, the moral disengagement theoretical framework (Bandura 1986) was adopted in order to comprehend how such disengaged cognitive processes impact the distributed cognitive system at Agency X, the *locus* of the unit of analysis

for this thesis (as already presented and will be discussed in further detail in Chapter 4). As reviewed, it is necessary to understand what impact morally disengaged thinking has on the information propagation and distributed knowledge, and the role it plays in facilitating breakdowns within the distributed cognitive system, leading to the third research question that was proposed (see Figure 3.6).

The adoption of such theoretical framework should lead to insights as to how and why corruption has perpetuated at Agency X. Both MD and DCog are compatible theories given their emphasis on cognitive processes. This will be a unique way of approaching this issue, leading to unique conclusions which will aid in advancing research in the e-government field, by establishing a new framework for studying such concepts. This approach also attends to calls from both information systems and social sciences scholars who argue for more studies adopting a cognitive approach (Rogers and Ellis 1994; Tenbrunsel and Messick 2004; Moore et al. 2012).

In addition, this marks the first time DCog and MD have been applied to e-government and corruption studies, the combination of which should set a framework for future studies.

3.5 Conclusion

Walsham (1995: 76) affirms that the "motivation for the use of theory in the earlier stages of interpretive case studies is to create an initial theoretical framework which takes account of previous knowledge, and which creates a sensible theoretical basis to inform the topics and approach of the early empirical work". In this regard, Chapters 2 and 3 have served that precise purpose.

In Chapter 2, literature in the areas of e-government, corruption, and anti-corruption strategies were reviewed. As a result, it was identified that current studies have been unable to provide meaningful answers as to how transparency can make governments less corrupt. In addition, it was identified that most research in e-government has favored a technical deterministic approach, determining that technological investments geared at improving governance should result in less corrupt governments, thus overlooking the "social" aspect of such investments, i.e. the people who actually manage and use these technical artefacts. This has resulted in a range of normative studies, suggesting what should happen in government, but non-specific as to how to attain such goals.

Seeking to address that gap in the literature – the lack of socio-technical studies geared at understanding the effect of transparency investments in government, Chapter 3 proposed the adoption of the distributed cognitive theoretical framework (Hutchins 1995). As such, the creation of information which is divulged in transparency portals was conceptualized here as a "cognitive system" comprising of both artefacts and human agents, both working in tandem to produce information. As will be discussed in Chapter 4 in more detail, the unit of analysis of this study is, therefore, the cognitive system at a governmental agency, identified here as Agency X. As an agency which is geared at procuring services and products for the Brazilian federal government, Agency X is at the forefront of creating transparency, since the output of the procurement processes it conducts is information that will then be published on the Brazilian Transparency Portal.

In addition, this Chapter also presented how the moral disengagement theoretical framework (Bandura 1986) will be used to comprehend how morally disengaged thinking by individuals who engage in wrongdoing impacts the cognitive system under study. As discussed, morally disengaged thinking is directly linked to unethical decision-making, thus it stands to

reason that it might play a role in facilitating breakdowns within the distributed cognitive system. This therefore leads to the need to understand in what ways it achieves this.

As a result of the discussion in this Chapter, three research questions were proposed (see Figure 3.6), the combination of which will lead to an understanding of how information is produced, the impact of breakdowns on the information flow and the role unethical behavior has in such breakdowns. It will also set the framework for future studies, as discussed previously, by emphasizing cognitive mechanisms, previously overlooked. The next Chapter will thus present the methodology adopted in order to answer such questions.

CHAPTER 4
RESEARCH DESIGN

4.1 Introduction

As reviewed in the previous chapter, this study is anchored on a socio-technical approach, which serves to guide this study in determining how technical and social aspects function both independently and in conjunction, as a way of explaining the limited impact transparency systems have had on Brazilian public institutions within the federal government. Transparency is conceptualized here as an information system, which comprises both human agents and technical artefacts working in tandem to create information that will ultimately be published and viewed by members of civil society.

In order to analyze how information is created and what effect wrongdoing has on the information system under analysis, two theories were established as frameworks for analysis: distributed cognition (DCog) and moral disengagement (MD). This chapter is thus aimed at delineating the methodological underpinnings of this research. It is structured as follows: section 4.2 is dedicated towards discussing the underlying epistemology of this piece of research. This thesis made use of an interpretive case study methodology, subject of discussion and presentation in section 4.3. The following section (4.4) presents the case selection. Subsequent sections (4.5 and 4.6) present the approach adopted for data collection and analysis. Sections 4.7 and 4.8 then present considerations regarding validity and ethics. The final section (4.9) presents concluding remarks.

4.2 Epistemology

According to Hirschheim (1992: 10), "epistemology refers to our theory of knowledge; in particular, how we acquire knowledge". Most of the research undertaken in e-government, and concerning transparency especially, has adopted a positivist epistemology. This is not the view that will be adopted here however.

As discussed in Chapter 3, two theoretical frameworks were adopted in order to study how information is created and the prevalence of unethical behavior in the face of mechanisms which were deployed to deter such actions: distributed cognition and moral disengagement. Both trace its origins to cognitive psychology theories, which essentially adopt a constructivist view of the world and of individuals, which posits that all knowledge is constructed from interactions between individuals and the world (Crotty 1998: 42). As such, that becomes the focus of this research: how individuals construct their knowledge, beliefs and representations of reality regarding information systems, corruption and accountability.

Constructivism contends that our representations of reality are not determined by the object, but rather are construed by the individual. It further contends that there is no neutral outlook on reality since all observations made are done so through the spectrum of our own personal hypotheses and theories regarding the world. In other words, what we construct is not an objective reality, but rather our own representation of it.

That is not to say however that all meaning is subjective (Crotty 1998). Since meaning is not simply "discovered", but is instead the result of an individual's interactions with the world, it is not constructed upon nothing, but it is built upon a pre-existing template. These ideas are also

reflected in the work of Berger and Luckmann (1966), who describe reality as socially created, a product of social interactions. Silverman (1971: 19) adds that "meanings operate not only in the minds of individuals but are also objective social facts residing in social institutions". This has a direct impact on how individuals make decisions and choices; these will be the result of how one socially constructs models and schemas (Scott 2014).

This notion also affects how organizations and technical artifacts are studied. How technology is enacted is necessarily influenced by the cultural environment surrounding it. Technology is therefore, under this prism, socially constructed and the extent of its impact is "mediated by situational factors and interpretive processes" (Scott 2014: 103). In regard to organizations, these too are socially constructed essentially by socially constructed actors (Borum and Westenholz 1995). So too are the concepts of transparency and corruption. This is in stark contrast to positivism, which constitutes the majority of work published in the field of e-government that base themselves on the premise that relationships are fixed *a priori* (Orlikowski and Baroudi 2002: 55) and phenomena must be investigated through the use of "structured instrumentation".

In constructivism, meanings and ideas are the result of social and historical events, and these are neither inevitable nor fixed. In this regard, Hacking (1999) introduces the concept of a "matrix", whereby ideas exist constrained by a social order, institutions or even ideologies. The matrix therefore serves as a mold, leading to socially constructed ideas and perceptions of reality. As Bostrom and Heinen (1977: 19) contend, "these forces mold frames of reference which serve as perceptual filters through which one perceives the world and provides guides for action"

Important to note that constructivism does not impose only one interpretation of reality. On the contrary, it accepts the notion that it is possible to construct reality in different ways (Crotty

1998). This means that how individuals behave in one setting, does not dictate how they will behave in another. Individuals can have different moral codes for different environments (work, family, community), which is directly dependent on how they perceive and construe such realities. This is congruent with the social cognitive psychology theory presented in the previous Chapter. As Bandura (2016: 28) affirmed:

> *"even the same individuals may adhere to different moral standards in different settings and domains of activity. For example, they may behave morally in their social relationships but transgressively on their income tax returns. In short, the standards people adopt are not merely facsimiles of what they have been taught or prescribed or have seen modeled. Rather, they are constructions based on reflections on diverse sources of morally relevant information".*

Two main streams within constructivism can be singled out. The first is *universal constructionism,* or *radical constructivism*, a descendant of linguistic idealism (Hacking 1999), which postulates that only what is discussed exists; out of the realm of discussion, nothing that is not talked or written about exists. In other words, all reality, including material objects, is a result of human construction. It also argues "for the distinctive nature of social phenomena as being intrinsically meaningful and not existing independently of social actors" (Mingers 2006).

The second stream is *mild constructivism,* a term coined by Sismondo (1993), which establishes some limitations as to *what* and *how* things can be construed. This is therefore a more moderate approach, which admits the possibility of there being a pre-existing reality that lies outside the scope of our perception. Such reality consists not only of objects, but of other individuals and the interactions between them. This is an ideal akin to Vygotski's social constructivism, from which the DCog theory (Hutchins 1995) draws its inspiration from, whereby emphasis is placed on the interactions between people and their environment, and how language

is used to mediate such interactions (Andrews 2012). As Fish observes (1990, cited in Crotty 1998: 52), "we are already embedded" in institutions, and "it is only by inhabiting them, and being inhabited by them", that we are able to comprehend the world surrounding us.

By applying this concept to technology studies, Kallinikos (2004: 144) notes that "technological characteristics that embody these wider historical and institutional processes and which partake in the constitution of local contexts are ignored. . . The issue of 'who' interprets and locally negotiates the meaning and functionality of technology therefore needs to be addressed". Moreover, Mackenzie and Wajcman (1985) observe that mild constructivism analyses can take a normative or political approach by analyzing the way in which particular technologies can come to incorporate certain political or social effects. Kallinikos (2004: 239) further affirms that, in the case of constructivist studies in IS, one of its main contributions refers to "the primary importance it attributes to contextual dynamics. . . Whether investigating the development of new technological innovations . . . or the forms by which existing technologies are brought to bear on local contexts. . . social constructivism gives a key role to the very processes by which technology is locally negotiated".

This is an approximation of the ontological proposition of critical realism, which contends that "while people subjectively hold multiple theories of the world, some of these theories may better approximate objective reality than others" (Smith 2006: 200). Lawson (1997: 8; in Dobson, Myles and Jackson 2007: 140) adds that "the world is composed not only of events and our experience or impression of them, but also of (irreducible) structures and mechanisms, powers and tendencies, etc. that although not directly observable, nevertheless underlie actual events that we experience and govern or produce them".

Realism is the ontological position that supports the actual existence of objects of knowledge, with characteristics that do not depend on our personal theories and will. In realism, our representations refer to objects that exist regardless of our minds, and somehow influence our views of them but do not necessarily determine them. In this regard, Smith (2006: 200) affirms that "for science to happen there must be a reality independent of our knowledge of it. . . Thus, while our knowledge of the world (transitive) constitutes a part of the world (intransitive), the existence of the world is not dependent upon this knowledge". Critical research assumes that social reality is historically constituted. Although society has the means to consciously make changes to their social and economic circumstances, they are limited in their ability to do so, be it because of social, cultural or political domination (or perhaps even a combination of all three) (Myers 1997). Carlsson (2006: 200) adds that "critical realism's manifesto is to recognize the reality of the natural order and the events and discourses of the social world. . . These structures are not spontaneously apparent in the observable pattern of events; they can only be identified through the practical and theoretical work of the social sciences". Further key components of critical realism refer to its emphasis on history and context; in other words, knowledge is the product of historical and social events. In addition, the real world is stratified into several layers, namely individual, group and institutional, resulting in a very complex structure. Kallinikos (2004: 237) states: "Such a complex web of relations surpass the horizon of the present, and involve the mediation of history and culture".

From an epistemological perspective, this research is therefore anchored on a constructivist approach, albeit in its milder form, allowing for the notion of pre-existing constructions that lie outside the realm of our perceptions. Methodologically, critical realism becomes useful to my line of research since it focuses on the "interaction of structure and agency through time" (Smith 2006:

202). As Smith (2006: 202) affirms, social structures "pre-exist the individuals within them. . . the emergent social structures have social properties that causally impact on the individuals that constitute them". He further postulates that:

> *"the individual's history and position relative to society will to a large extent determine their individual interpretation of technology. This aspect has been well researched by those in the social construction of technology school. What remains under-theorized however, is the technological artifact itself and what aspects of technology constrain and influence human behavior" (Smith 2006: 205).*

In summary, my research will adopt a realist view of *being*, in the ontological domain, while allowing for the construction of knowledge, in the epistemological domain. Methodologically, my research will be interpretive case study, which I trust will suggest findings for future studies. This will be discussed in the next section of this Chapter.

4.3 Case Study

Merriam (2002: 3) affirms that "the key to understanding qualitative research lies with the idea that meaning is socially constructed by individuals in interaction with their world". Having therefore established that the epistemological framework that best suits this study is a constructivist one, the methodology adopted will be of a qualitative nature and the specific research design used will be a case study. The justification for the methodology, along with a discussion pertaining to the research design will be discussed in this section.

4.3.1 Choice of Methodology

Yin (1994: 1) states that case studies are typically "the preferred strategy when 'how' or 'why' questions are being posed . . . and when the focus is on a contemporary phenomenon within some real-life-context". Walsham (1995: 376) adds that "Interpretive methods of research adopt the position that our knowledge of reality is a social construction by human actors. . . [it] contrasts with positivism, where it is assumed that the 'objective' data collected by the researcher can be used to test prior hypotheses or theories".

Furthermore, when applied to the study of corruption, a topic this thesis touches upon, Palmer (2012: 39) explains that "qualitative case studies allow for the examination of how unethical, illegal, and socially irresponsible behavior evolves over time, in the presence of organizational structures and social relationships, in decision contexts that are complex".

The theoretical framework chosen for this thesis also indicates the need for a qualitative piece of research. As discussed in Chapter 3, a socio-technical view to the phenomena in question – transparency systems – has been adopted. More specifically, it was established that a DCog theoretical framework would be used and that a second line of enquiry would involve identifying MD mechanisms. As Lindblom and Thorvald (2017) explain, this framework is particularly suitable for studying information flows and cognition embedded in complex socio-technical domains.

When conducting a literature review, all of the studies found that had adopted DCog were of a qualitative nature. What DCog claims the researcher should focus their attention on and aim to do, explains why this is the case: an in-depth "study of a setting, paying close attention to the activities of people, their communications with each other and their interactions with different

media" (Rogers 2006: 2). This is congruent with Merriam's (2002: 8) view of what the purpose of a case study should be: "[it] is an intensive description and analysis of a phenomenon or social unit such as an individual, group, institution, or community. The case is a bounded, integrated system. By concentrating upon a single phenomenon or entity (the case), this approach seeks to describe the phenomenon in depth".

Different scholars who specialize in case study methodology adopt different approaches to what the unit of analysis should be, in addition to ascribing to different epistemological stances. Due to the nature of this study, I have defined, as already discussed, that the epistemological approach is a constructivist one. In addition, the unit of analysis established is not a person or an event. In my study, the unit of analysis is less tangible, as per what is established by the DCog approach (Hutchins 1995; Halverson 2002; Furniss and Blandford 2006). In this regard, from a DCog perspective, the "unit of analysis defined in relation to the complex phenomena being observed" (Halverson 2002: 249).

Zhang and Patel (2006: 340) add that "from the distributed cognition perspective, the unit of analysis is the interaction between the components of the system, not the components themselves". Hence, following what is established by theoretical framework, the unit of analysis in this case study is the information system which is composed of cognitive processes distributed amongst human agents and artefacts. The focus is therefore the activity between individuals and artefacts in the process of producing and creating information.

Both Walsham (1995) and Yazan (2015) affirm that Yin (2002), though one of the most referenced scholars regarding the case study approach, ascribes to a more positivist epistemological stance. Merriam (1998; 2002), on the other hand, makes it clear that she considers

the case study approach to be a constructivist endeavor. Moreover, she is more flexible as to what constitutes a case, describing it as a phenomenon or a "bounded system". Thus, it is the guidelines established by her that will be followed.

Merriam (1998; 2002) delineates five steps that must be met towards designing qualitative research:

1. Conduct a thorough literature review: according to Merriam (1998; 2002) this is the only way of identifying a theoretical framework. Moreover, it grants the researcher the opportunity to evaluate the state of the field he/she wishes to study, ensure that there is no prior research that accomplishes the exact same thing he/she aims to do and aid in formulating the research questions.
2. Establish a theoretical framework: Merriam (1998) defines the theoretical framework as the "scaffolding" for one's research. The same issue can be approached in different ways, and a sound framework will aid the researcher in providing the lens through which to study it.
3. Identify the research problem: this can come from the literature, from a theory, or even be based on an interest.
4. Establish what the research questions are: based on the research problem, more specific questions should be asked which will guide the inquiry and determine data collection.
5. Sample selection: involves identifying the unit of analysis and data gathering strategy (who to interview, how many interviews, what to observe).

In accordance with these guidelines, Table 4.1 summarizes how these were approached and addressed. Discussion regarding literature review (step 2 above), theoretical frameworks adopted (step 3), and research problem and questions (steps 4 and 5) formed the basis for Chapters 2 and 3. Hence, the next section of this chapter will discuss the unit of analysis and selection.

Table 4.1 – Research Strategy

Literature Review	Conducted extensively by researching both academic journals and books, in addition to practitioner guides, recommendations, surveys, opinion pieces. Research was conducted both online and in academic library. Discussion presented in Chapter 2.
Theoretical Framework	Theoretical frameworks established are Distributed Cognition (Hutchins 1995) and Moral Disengagement (Bandura (1986). These were discussed in Chapter 3.
Research Problem	The overarching question that drives this research is why transparency has failed to curb corruption. The research problem has been defined as: How information is produced, shaped and transformed at Agency X.
Research Questions Unit of Analysis	Three research questions have been established (as presented in Chapter 3): 1. How are cognitive processes distributed between agents (human and artefact) at Agency X? 2. How do breakdowns impact the information system at Agency X? 3. How do moral disengagement mechanisms facilitate the breakdown of information systems?
Unit of Analysis	The cognitive system at Agency X (presented more extensively in Chapter 4, section 4.4).

4.4 Case Selection

As the main theoretical approach adopted, DCog establishes what the unit of analysis should be quite clearly: the cognitive system or, in this case, the information system which produces (or creates) transparency. To this extent, Liu et al. (2007: 2) affirm that "the unit of analysis should not be a human individual, but a cognitive system composed of individuals and the artifacts they use to accomplish a task".

As discussed in Chapter 2, transparency was conceptualized as an information flow which comprises three distinct phases: creation of information, publication and public access of information. As such, government portals, on which information is published, are the last phase of that information flow. It was my contention that the "creation" phase of transparency has been understudied and that the dynamics of how information is produced at that stage bear a significant impact on whether transparency has the ability to curb corruption or not.

In order to study this phenomenon, a work system of people and artefacts where corruption was present had to be identified. Observing corruption implicates on what Greve et al. (2010: 94) allude to as a "frequent dilemma in research on misconduct". It involves having to choose whether to analyze data that becomes available post-investigation, after acts of corruption and misdeed have been uncoverd, or researching acts of misconduct as they occur.

The main body of research on corruption has favored incidences of corruption post-discovery, primarily because it is easier to study something that has already been uncovered. This implicates however on having to reply on participants' recollection after events have taken place which may or may not represent an accurate account. For this reason, Greve et al. (2010) call for alternative forms of analyzing corruption incidences (as they occur, for instance), claiming that

this could result in valuable insights. Regarding this piece of research specifically, it was my contention that studying people who are in the midst of commiting wrongdoing would grant a greater insight into how these individuals think and behave as part of a distributed cognitve system. This is a novel and less explored manner of researching the topic of corruption.

Due to the fact that corruption occurs in a covert manner, finding cases whereby corruption is systematically taking place at present proves to be a difficult task. There is little documented evidence of its practice and, due to the large amounts of data the federal government manages, nor are they easily discoverable. Finding such a case therefore required some investigation and a significant amount of time was dedicated towards investigating where possible acts of wrongdoing were being undertaken. This was achieved by establishing valuable contacts within the Brazilian federal government and learning enough about government processes in order to be able to identify acts of misconduct. A key learning point therefore is that a deep understanding of government institutions, processes, and people, is of utmost importance for the selection of cases. In addition, establishing trust was fundamental in conducting research of this sort, in order to convince public officials to reveal acts of misconduct, which they have either witnessed or taken part of, and to allow access to them. Access to the actual organization picked as the *locus* of the unit of analysis was granted as a result of networking, establishing trust and rapport.

In summary, case-selection had to obey the following criteria:

1. The *locus* of this information system had to be situated within the Brazilian federal government, since I am interested not in any information, but information that is created specifically for the Brazilian federal government's Transparency Portal.

2. Since I am interested in finding out why corruption persists even in the face of transparency mechanisms in place, the information system selected had to have as part of it, people who behaved unethically. In other words, traces of acts of corruption had to be ongoing and present within the work system selected.
3. Access to the organization had to be granted. Not only permission to go to the organization, but also to access and interview its members, observe their process, access documents, understand their technical systems.

An overview of the case, its settings and the agents that compose the distributed cognitive system – artefacts and humans – will be described in the next section.

4.4.1 Unit of Analysis: Setting

Research was conducted at an agency situated within the structure of the Brazilian federal government. Agreement to take part in this study was granted by the Director of this agency. They declined however to be identified, and will therefore be referred to throughout this thesis as Agency X.

The Brazilian federal government currently has 29 Ministries, employing over 770,000, spread across agencies located in the entire country. Agency X is situated below Ministry X. Budget execution data is centralized for the entire federal government via a technical system called SIAFI (Integrated System of Federal Government Financial Administration), which is reflected on the Transparency Portal (managed by the Comptroller General of the Union – CGU) and available for consultation by anyone.

Agency X is a small organization whose main function is to execute and manage procurement processes not only for itself, but also for several other agencies across Ministry X; it is therefore responsible for budget execution and its activities are recorded on SIAFI (a technical system owned and managed by the National Treasury), and consequently on the Transparency Portal (which holds all budget-related information and through which spending is communicated to civil society). As such, it is at the forefront of information creation, and thus an integral part of the transparency mechanism deployed by the Brazilian federal government. Despite this, it has been identified that civil servants at Agency X do not always adhere to processes and often engage in acts of misconduct and corruption (as will be discussed in Chapters 5 and 6). For this reason, it makes for the perfect setting for researching this conundrum: why the implementation of transparency has failed to yield the results which had been expected, i.e. less corruption.

Important to highlight that the information created by Agency X relates to budget execution. Thus, the information system under analysis refers to procurement (or purchasing[2]) processes at Agency X. The result of such processes is what forms the basis for the information that is published on the Transparency Portal.

4.4.2 Agents

As established by the DCog theoretical framework, of interest here is the interplay between human agents and artefacts. The activity and exchange between both is what comprises a distributed cognitive system. Each one will be reviewed here.

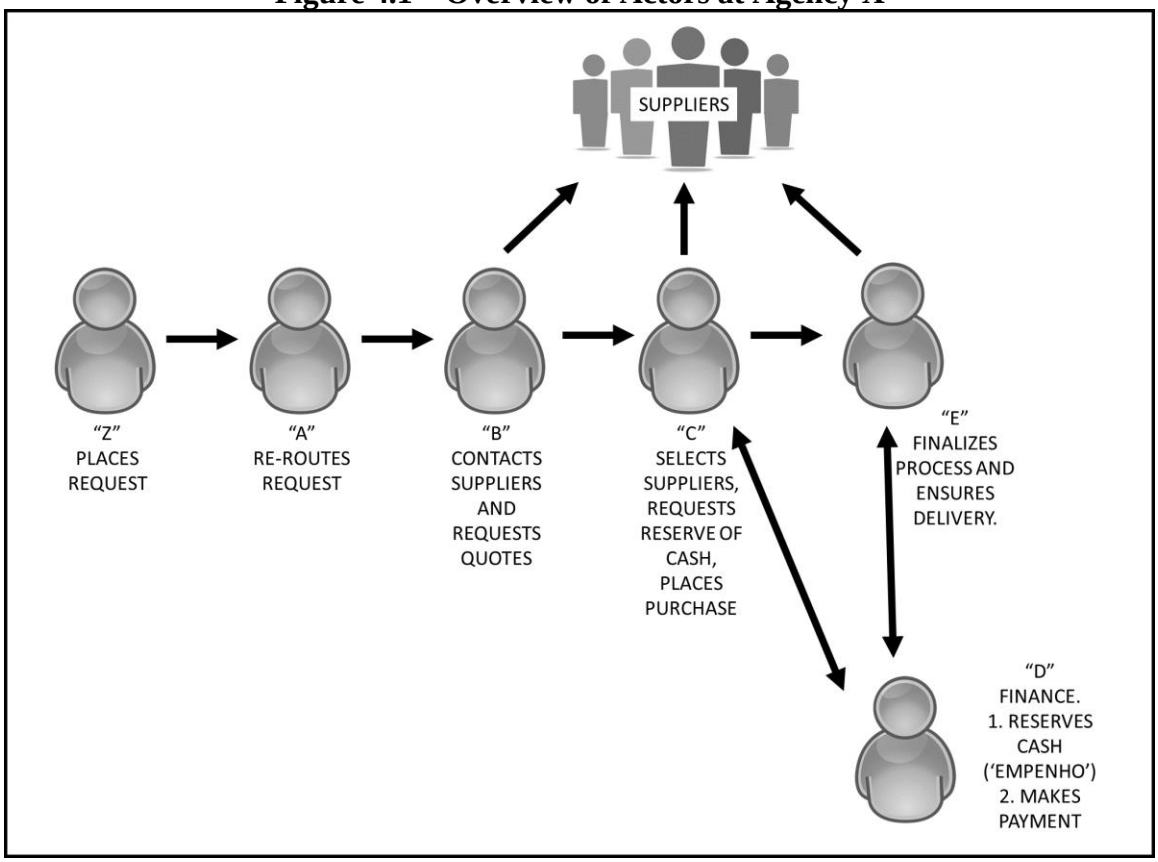
[2] Both terms will be used interchangeably throughout this thesis.

4.4.2.1 Actors (Participants)

As will be reviewed in more detail in subsequent chapters, the Ministry under which Agency X is situated deployed an internal system (hereby referred to as IntSys), through which procurement processes are managed. Procurement processes are triggered once a need is identified and a purchase request is placed on the IntSys by "Z". Figure 4.1 depicts the main chain of events and those involved in the process. As can be observed, the process is touched upon by six groups of people (each stage in fact represents a team, and not necessarily a specific person). "D", which represents the financial department is involved twice. In addition to Agency X's internal personnel, suppliers are also involved in the process, being consulted at various stages: to have quotes sent (by "B"), once purchase order is made ("C"), and then once again by "E" in case an invoice is not received or further instructions regarding delivery need to be given.

If a process strictly follows procedures and no issues arise along the way, then these will be the only groups of people involved and it should be completed within eight phases, which are broken down into thirty-nine steps (this will be reviewed extensively in Chapter 6). In addition, "Z" would probably not be consulted more than twice throughout the entire process: once to confirm budget has been allocated, and then once more to ensure that purchase has been delivered. If a process is not adhered to either intentionally or not, then other groups of people might get involved, such as upper management and "middlemen" (i.e. external consultants). These are the instances that are of particular interest since these will be the opportunities when acts of wrongdoing have been observed to be committed. How that is accomplished through the system will be an area this thesis will focus on.

Figure 4.1 – Overview of Actors at Agency X



4.4.2.2 Artefacts

Participants at Agency X rely on several computer and paper-based information sources (i.e. artefacts) to manage information and see the purchase process through to completion. Select artefacts that are relevant to this process and form an integral part of the distributed cognition system are summarized in Table 4.2. An understanding into the functionality of these was derived based on interviews, a demonstration, observation, in addition to documents (such as manuals and procedural documents).

Both artefacts and actors constitute a cognitively distributed system that work in tandem to produce information ('transparency'). This interplay becomes the focus of this study so as to identify the features which will lead to addressing the research questions proposed.

The next section will review how data has been collected.

Table 4.2 – List of Artefacts

Type	Artefacts
Technical Artefacts	Internal System (IntSys)
	SIAFI
	MS Word
	E-mail
	Telephone
	Printer
Paper-Based Artefacts	Paper files
	Paper notes
	Invoice

4.5 Data Collection

According to Merriam (2002: 12), "there are three major sources of data for a qualitative study – interviews, observations, and documents". Moreover, the data collection strategy is determined by the research questions asked and what type of data will be most helpful in addressing and answering them.

In this case study, the data collection methods used were semi-structured interviews, participant observation and document analysis. In addition, one further data collection technique was used and consisted of applying a survey, Moore et al.'s (2012) Moral Disengagement Measure. This will be reviewed in the next sections.

4.5.1 Interviews

Patton (1990: 278) affirms that researchers should conduct interviews when "we cannot directly observe. . . We cannot directly observe feelings, thoughts, and intentions. We cannot observe behaviors that took place at some previous point in time. We cannot observe situations that preclude the presence of an observer". The purpose of an interview is therefore to comprehend these unobservable events and perceptions. As such, Merriam (2002) affirms that interviews should constitute the main form of gathering data in a qualitative study.

Interviews can vary from a highly structured format, to an unstructured format. In the case of my study, semi-structured interviews constituted one of the main sources of data collection. Such format ensures that specific desired information is gathered from the participant, whilst also allowing for topics to emerge.

The interviews conducted took place over the course of two rounds:

(1) 28 participants were interviewed between February and April of 2015. These consisted of civil servants at Agency X, aged between 28 and 51, 20 women and 8 men (refer to Appendix I for a detailed overview the category of interviewees). The majority of those interviewed worked directly with the information system, as part of the procurement process; others were indirectly involved (upper management and technical support).

(2) In February 2016, a follow up of 17 interviews were conducted. These 17 people had previously been interviewed in the first phase and the aim was two-fold. Firstly, to fill gaps that had been left and were only identified once coding the first round of interviews. Secondly, to identify whether there were any additional events that I should be made aware of (especially since it was the beginning of a new fiscal year).

All interviews were conducted in Portuguese and only quotes cited throughout this thesis were translated. They were recorded with the use of a Livescribe Echo Smartpen, which allowed notes to be taken simultaneously and then re-played. All voice recordings were later transcribed and coded. Recordings of these interviews were kept in the hard drive of my computer, with a backup maintained on an external HD, which was stored at my home office at a safe location.

To ensure that anonymity was maintained, a numeric code was assigned to each interview (Int1 to Int28 in the first round, Int1v2 to Int17v2 in the second round) detailing only the dates these took place; no names were stored with the recordings. Each interview lasted between an hour and an hour and a half. No monetary payment was made and participation in the study was purely voluntary. All interviewees were informed ahead of time about the purposes of the research and given the opportunity to withdraw consent to participate. Prior to initiating interviews, the Director of Agency X, who had consented to my presence there, introduced me to everyone to make them aware I would be approaching them.

Interviewees were selected on the basis of the roles they played in terms of taking part in the procurement process or not. In addition, "snowball sampling" (Merriam 1998) took place. In other words, some interviewees aided in pointing out to me who else I should speak with in order to gain a full understanding of both the procurement process, the roles each one played, and the dynamics both between people, and people and artefacts.

In addition to the interviews conducted at Agency X, in order to gain an understanding of the context in which Agency X is situated and further comprehend the dynamics behind the deployment of transparency throughout the federal government, and more specifically at Agency X, I conducted 6 semi-structured interviews with participants who held positions at the Comptroller General of the Union, Ministry X, and the Ministry of Planning between the periods

of August 2015 and February 2016. These provided an insight into the decision-making and process of transparency deployment and complemented the documental analysis and literature review.

An additional interview with a public prosecutor directly involved with the Car-Wash investigations was later held in April 2018. This opportunity led to a greater insight and understanding of the anti-corruption legal framework and efforts in Brazil, complementing the data that had already been gathered thus far via document analysis and literature review. As Stake (2010: 52) affirms, "qualitative research differs from much quantitative research by giving careful study to contexts". As such, understanding the context is important towards understanding the unit of analysis, especially since much of the context will bear an impact on it. In the case of the cognitive system that is under study, it is subject to technical changes that were implemented by the Ministry, an event which took place due to the enacted legislation (see Chapter 5 for detailed discussion).

All interviews were conducted in Portuguese and lasted between an hour and an hour and a half. These were recorded with the aid of a Livescribe Echo Smartpen and then later transcribed. As with the interviews conducted with participants at Agency X, recordings of these interviews were kept in the hard drive of my computer, with a backup maintained on an external HD, which was stored at my home office at a safe location. A numeric code was assigned to each interview (ExtInt1 to ExtInt7) detailing only the dates these took place; no names were stored with the recordings. No monetary payment was made and participation in the study was purely voluntary. All interviewees were informed ahead of time about the purposes of the research.

4.5.2 Observation

Merriam (2002) indicates that observations can be just as important as interviews in qualitative studies. Stake (1995: 60) complements this by affirming that "observations work the researcher toward greater understanding of the case".

Thus, in addition to interviews, I was allowed to spend time on-site at Agency X for four afternoons during the period between February and April of 2016. This opportunity allowed me to not only observe the interactions between those working in that environment, but also have access to the system and directly observe how they operate. Some of these sessions, the ones where I was specifically shown the technical systems, were voice recorded using a Livescribe Echo Smartpen (two of them). For the other sessions, only notes were kept and then later coded. Dates were assigned to each set of notes.

These sessions provided a very rich dataset and were key towards developing insights using the DCog theoretical framework. Part of the data that informed the analysis (in Chapter 6) could only have been obtained by means of observation.

4.5.3 Documents

Documents analyzed consisted of internal manuals and guidelines, Power Point (.ppt) presentations, screenshots of technical systems, and information reproduced from both their external website and intranet. Some of the manuals and screenshots were kindly given to me. Permission was not granted to have either screenshots of the Internal System or internal documents reproduced here, as this would have compromised the anonymity of Agency X. The screenshot of

SIAFI reproduced here is one that is available on the implementation manual for SIAFI, available on STN's website (in other words, widely available to anyone for consultation).

Documents served mostly the purpose of clarifying how procedures should work and clarify where formal procedures diverged from the ones taking place in reality.

4.5.4 Questionnaire: Moral Disengagement Measure (Moore et al. 2012)

In addition to the interviews, at the end of each session participants at Agency X were asked to fill out Moore et al.'s (2012) Moral Disengagement Measure (see Appendix IV). In total, twenty-eight questionnaires were completed. The Moral Disengagement Measure was not applied to those interviewees who were external to Agency X, only to the civil servants who worked there, during the first round of inverviews (as detailed in the previous section of this Chapter).

The aim of administering this questionnaire was to confirm the existence of moral disengagement mechanisms amongst those interviewed. The purpose of such measurement is to ascertain individuals' propensity to morally disengage and thus engage in unethical decision-making. The Measure elaborated by Moore et a. (2012) therefore aided in identifying the existence of moral disengagement mechanics present amongst individuals at Agency X. The results obtained here were then contrasted with the information collected qualitatively. Thus, utilizing a quantitative measure served to reinforce the validity of the data gathered.

4.6 Data Analysis

Three research questions were proposed in Chapter 3. As per Merriam's (1998) guidelines, these were established after selecting the theoretical framework to be used in this study:

R1: How are cognitive processes distributed between agents (human and artefact) at Agency X?

R2: How do breakdowns impact the information system at Agency X?

R3: How do moral disengagement mechanisms facilitate the breakdown of cognitive systems?

The first two research questions were established as a result of adopting distributed cognition as a theoretical framework. The first one (R1) seeks to understand the dynamics of this complex interplay of human agents and artefacts. The aim is to gain an insight as to how information moves and transforms throughout this system, which constitutes the unit of analysis, and what role each one – human agent and artefact – play in this.

To aid in this, Hutchins (1995) advises that an "Activity Score" should be elaborated. As he explains, an activity score is necessary to identify the relation between the different components of the distributed cognitive system and how information propagates through the system in the sequence of tasks. In establishing his distributed cognitive theory by applying it to navigation teams, Hutchins (1995: 186) explains that "in order to examine the properties of the performance of the navigation team, it is useful to have a representation of the activity that makes clear the relations among the activities of the various members of the team". This is achieved by analytically breaking down processes and is, as will be discussed in Chapter 6, the first step towards analyzing data since it is completed prior to coding of data.

The second question (R2) refers to breakdowns, which are understood in DCog terminology to be "potential failures in communication or information flows that will impair the system's performance or prevent the system from achieving its goals" (Sharp and Robinson 2006: 4). In order to identify if any breakdowns take place, it is necessary to first understand how the system *should* work and compare it to how it *actually* works.

The third question (R3) was established in order to identify whether moral disengagement mechanisms have a role in facilitating breakdowns in any way. The intention in establishing such a question was to identify if unethical-decision making bears any reflection on how information is produced. Both theoretical frameworks, in conjunction, would then provide a clear picture of how this information system works, the role each agent plays, and how (if at all) wrongdoing impacts the quality of the information produced (and if so, in what ways).

In order to analyze data through these theoretical frameworks, the following strategies were established: (1) coding data for DCog principles using the DiCoT (Distributed Cognition for Teamwork) methodological framework (Furniss and Blandford 2006); (2) coding data for MD mechanisms as delineated by Bandura (2006); (3) a third round of inductive coding, in order to ensure no significant theme had been missed and not captured. This will be discussed in subsequent sections of this Chapter.

4.6.1 DiCoT

As briefly introduced in Chapter 3, in order to facilitate the analysis through a DCog lens, the DiCoT (Distributed Cognition for Teamwork) methodological framework elaborated by Furniss and Blandford (2006) was used.

The advantage of using this framework is the possibility to code and analyze data in a structured way. One of the issues in the DCog theoretical framework approach for analyzing data is the lack of structure, which may render a researcher lost due to the sheer amount of data and DCog-associated principles. In that regard, Furniss and Blandford (2006) elaborated this model in order to facilitate the analysis. As Furniss and Blandford (2010: 1) affirm, "DiCoT can provide a focus to start [with]".

DiCoT outlines 22 principles which are organized into five different models: physical layout, artefacts, information flow, social structures, and evolutionary (see Table 4.3). The principles are drawn from DCog literature and, once formed, the five models give a clear insight into how the cognition is distributed and how information moves through the system. In addition, it aids in identifying issues and breakdowns.

Utilizing this model, the data was coded for each of the DCog principles to establish their presence or not. Once the data had been coded, diagrammatical and narrative representations were established for each of the five models. The analyses combined then generated a complete picture of the system.

Table 4.3 – DiCoT Models

Model	Principle	Brief Explanation
Physical	Space and cognition	How physical layouts supports (or fails to support) cognition.
	Perceptual principle	Mapping between spatial layout and cognitive structures.
	Naturalness principle	Refers to the "stimulus-response" compatibility.
	Subtle bodily supports	The use of body to support cognitive processes (e.g. pointing or gesticulating).
	Situation awareness	Refers to how accessible work of the team is, including proximity of others around them.
	Horizon of observation	Refers to what can be seen or heard by a person.

	Arrangement of equipment	Physical layout of equipment.
Artefact	Representation - goal parity	Representation of the relationship between current state and goal state of artefact.
	Mediating artefacts	Include artefact that are introduced in order to complete task.
	Creating scaffolding	External artefacts and environmental cues introduced to simplify cognitive tasks.
	Coordination of resources	Resources can be internally and externally coordinated to aid action and cognition.
Information Flow	Information movement	How information moves around the system, e.g. artifacts, text, verbal, telephone, etc.
	Information transformation	Transformation takes place when representation of information changes.
	Information hubs	Where different information channels meet and different sources are processed together.
	Buffering	Refers to the arrival of new information that may interfere with ongoing activity.
	Communication bandwidth	Face-to-face communication that takes place.
	Informal communication	Informal communication which represent an important function.
	Behavioral trigger factors	Trigger mechanisms that elicit behavior.
Social	Social and goal structures	How goals are distributed amongst social structures in order to complete task.
	Socially distributed properties of cognition	Mitigating instances when performance of cognitive tasks exceed individual abilities.
Evolutionary	Cultural heritage	How processes established through time shape current behavior.
	Expert coupling	Degree to which user and system work in tandem and are coupled.

4.6.2 Moral Disengagement

In addition to applying Moore's et al. (2012) Moral Disengagement Measure to all participants interviewed, I also used Bandura's (2006) Manual for Coding Moral Disengagement (which he, along with White et al. (2009) had applied to the study of MD in organizations) to qualitatively code the data gathered.

The use of Moore's quantitative scale was to identify the presence of moral disengagement mechanisms amongst participants at Agency X who actively engaged in creating information there. Once identified, it was necessary to understand in which ways moral disengagement mechanisms manifested themselves, so as to then analyze whether this impacted the information system in any way. Data was coded for each of the eight mechanisms outlined by Bandura: moral justification, advantageous comparison, displacement of responsibility, diffusion of responsibility, euphemistic labeling, minimizing or distorting harmful effects, attribution of blame, and dehumanization (see Appendix III).

4.6.3 Inductive Coding

In addition to deductive coding for theory-driven principles, a third round of coding in an inductive way took place. The intent was to ascertain that no significant piece of theme had been left unaccounted for. As a result, additional DCog principles not delineated by Furniss and Blandford (2006) in their DiCoT framework were in fact identified. These results will be discussed in Chapter 6.

In summary, data analysis involved many rounds of coding. Mostly deductive, it involved identifying theory-related principles. A third round of inductive coding resulted in additional DCog principles emerging. Important to note that coding was done manually, not using any software. This was a conscious decision. Oates (2006) though not opposed to using software for data coding, mentions that some researchers might feel distanced from their raw data if using such tools. He also affirms that opting to choose a software or not is a personal decision. In my case, I felt that coding it manually gave me a better grasp of the data. To accomplish this, I built models on Excel

spreadsheets, one for each source of data. Then, having printed them off, I started looking for the commonalities and points of convergence so as to, in the end, consolidate everything in one single spreadsheet. Notes were also made of illustrative quotes, which were then put together in the same final spreadsheet.

Table 4.4 summarizes the last two sections of this chapter, listing all the data points and how they pertained to each of the theory-related principles that were being investigated.

Table 4.4 – Data Points

Data Point		Method of Collection
Contextual Information		- Literature review. - Document review. - Interviews with those at Agency X. - Interviews with people across the federal government involved with transparency. - Interviews with people across the federal government involved with accountability and anti-corruption efforts.
DiCOT Models	Social structures	- Interviews with people across Agency X. - Interviews with those directly involved with the information system. - Observation of the interactions amongst those working at Agency X. - Documents on organizational structure. - Personal notes.
	Information Flows	- Interviews with those involved with the information system. - Interviews with those involved in the deployment of technical systems (directly or indirectly). - Interviews with those responsible for managing systems.
	Physical layout	- Observation of the physical layout. - Notes.
	Artefact	- Interviews with developers. - Interviews with the users. - Documentation review (i.e. manuals).
	Evolutionary	- Interviews with developers. - Interviews with users. - Interviews with the agents at Ministry X and CGU.
Moral Disengagement/ Perceptions		- Interviews with those at Agency X. - Questionnaire: Moral Deception Measure (Moore et al. 2012).

4.7 Validity and Triangulation

Yazan (2015) affirms that validity is more closely aligned with a positivist epistemological stance. Nevertheless, regardless of epistemology, it is still possible to strengthen rigor and quality. To that extent, Merriam (1998: 201) affirms that "all research is concerned with producing valid and reliable knowledge in an ethical manner". For her, validity is guaranteed in the way that data is reported: "the qualitative study provides the reader with a depiction in enough detail to show that the author's conclusion 'makes sense'" (Merriam 1998: 199).

Stake (2010) complements this view by presenting a discussion on triangulation. He lists four strategies for triangulation, amongst which are mixed methods triangulation and progressive focusing. In this regard, I have attempted to ensure validity and triangulation by observing both Merriam's (1998) and Stake's (2010) recommendations. The DiCoT methodological framework aids greatly in this endeavor. As will be presented in Chapter 6, the DiCoT model forces the researcher to give a detailed account of events by breaking the data into five different models. These have resulted in a rich data-set.

In regards to triangulation, this was ensured via mixed methods. That is, three qualitative data collection forms were used, in addition to the use of a quantitative one (a questionnaire). The use of the Moral Disengagement Measure by Moore et al. (2012) no doubt ensures the validity of the data set concerning moral disengagement, since one set of results confirms the other.

In summary, I have attempted to follow recommendations on validity and triangulation, in addition to being as transparent as possible with how data was collected and analyzed.

4.8 Ethics

Oates (2006) affirms that it is the obligation of the researcher to behave as ethically as possible, both towards the people involved in the research (i.e. the participants interviewed), and the academic community who will later read and review this piece of research.

In regards to behaving ethically towards participants, the research ethics policy and procedures that the London School of Economics establishes were observed. In addition to this, Oates (2006) states a list of rights that every participant should be entitled to: to refuse to participate, to withdraw, to give informed consent, and the right to anonymity and confidentiality.

All participants were informed ahead of time of the nature of the research. They were all informed that they could withdraw at anytime (and in fact, not all agreed to be interviewed a second time due to personal reasons). In addition, all interviewees were made aware as to their rights regarding anonymity and confidentiality. To preserve this aspect, all interview recordings have been safely stored, with no reference as to who shared what. Agency X itself also had to consent to have its members and space researched. In this regard, the Director of Agency X gave his approval and provided me with a signed letter proving that consent was given. As part of the agreement for conset, it was established that their anonymity – both agency and participants – would be preserved. And indeed I have, as best as possible, omitted in this research any information that could be directly linked to them in any way, including not referencing the Ministry whose authority they are under.

Regarding the ethical commitment towards the academic community, I have attempted to be as transparent as possible regarding data collection and analysis. I can confirm that data was recorded accurately and fully. This has been guaranteed through triangulation and validity.

4.9 Conclusion

This Chapter aimed to delineate the methodological underpinnings adopted in this thesis. As established, the theoretical framework along with the research questions proposed, led to a qualitative type of research. A case study approach was adopted and a unit of analysis designated, based on considerations by Merriam (2002), i.e. after an exhaustive literature review, a theoretical framework established, and both research problem and questions identified.

Methods of data are diversified, as recommended by Stake (2010), which ensures triangulation (through mixed methods). In addition, the use of DiCoT and MD to code and analyze data was also extensively discussed. The structure of DiCoT, along with its focus on exhaustively coding data for DCog principles, no doubt also ensures the validity of this research.

To be clear, DCog is the theory, DiCoT is the methodological framework, providing a structure for analyzing data. Adopting DiCoT as a framework for analysis does not substitute familiarity and understanding of the theory it draws its principles from (as discussed in Chapter 3).

CHAPTER 5
CASE STUDY: CONTEXT

5.1. Introduction

As established in the previous chapter, this study relies on the premise that transparency systems are socio-technical structures. The unit of analysis for this study is the cognitive system upon which the stage of transparency creation is embedded and operates in. In the distributed cognition (DCog) theoretical framework, the cognitive system comprises of both human agents and technical artefacts. Zhang et al. (2002: 42) ponder that "human activities in concrete situations are guided, constrained, and even determined by the psychical and social context in which they operate. . . the properties of a distributed cognitive system consisting of a group of human agents interacting with complex systems". Thus, information systems may vary depending on the context in which they operate.

Walsham (2009: 53) further contends that in information systems, "it is important to see organizational change as linked to both intraorganizational and broader contexts, and not to try to understand projects as episodes divorced from the historical, organizational or economic circumstances from which they emerge". To this extent Stake (2010) adds that in order to infer interpretations of data, it is necessary to gain a good level of understanding of the context. He further posits that "context is background" (Stake 2010: 51) and that a unit of analysis may be inserted in several different contexts. In the case of information systems, Walsham (2009) suggests that a contextual analysis include the immediate department, the organization, national setting, in addition to the various social structures present. To this extent, Hollan et al. (2000: 178) affirm

that to study distributed cognition, is to study cognitive processes socially distributed amongst members of a social group and artefacts, all of whom are embedded in "complex cultural environments".

As such, this chapter is aimed towards reviewing the context in which Agency X, and more specifically, the unit of analysis under study – the cognitive system – is situated. In order to achieve such aim, section 5.2 will present an overview of the Brazilian national context which influences how Agency X and has shaped the technical system which is in place supporting how information on the Transparency Portal is produced, such as the political and economic landscapes, the anti-corruption legislation which has been enacted over the years, and culture. Section 5.3 reviews how the structure of the Brazilian government and how Agency X is situated in this context. Section 5.4, on the other hand, will look into the transparency framework, detailing the technical components which support it, and how Agency X relates to this. Section 5.5 will consist of describing how Agency X functions and attempting to understand some of the social groups and dynamics in place. Studying the context upon which the information system under analysis is embedded allows the researcher to gain a deeper understanding of the dynamics that may constrain or encourage the cognitively distributed processes present.

5.2. National Context

Agency X is situated within the structure of the Brazilian federal government which has undergone critical changes over the course of the last thirty-five years. Events, which include political, economic, in addition to legistative changes, have helped shape Agency X and, more

specifically, the information system under analysis. This next section will therefore review such context.

5.2.1. Brazilian Political Landscape and Economy

Brazil has experienced significant political turmoil over the last few years. Under a military dictatorship rule from 1964 to 1985, Brazilian democracy is relatively new but, until 2013 all signs indicated that it had been fully consolidated. It had seen the successful transition between presidents and the economy was booming. In addition, Brazil had closed the gap on inequality through its cash transfer program, the "Bolsa Família", become the sixth largest economy in the world (Cebr 2011), and elected its first female President, Dilma Rouseff. Approval rates for President Rouseff reached an all-time high in 2011 (Confederação Nacional da Indústria 2011) and all indicators pointed to a promising future.

Then, towards the end of 2014, this all seemed to change and Brazil was yet again facing economic turmoil and political instability. Inflation rates grew to levels that had not been seen since the early 1990s, social programs were slashed left and right due to a serious budgetary deficit (Martello 2015), and then, in August 2016, President Dilma Rousseff was impeached, accused of manipulating the government budget and making use of creative accounting prohibited by law – the same law that was used as basis for the creation of its Transparency Portal in 2004, the Fiscal

Responsibility Law promulgated in 2000 (BBC 2016)[3], making her the second president to be ousted in less than 30 years of democratic rule.

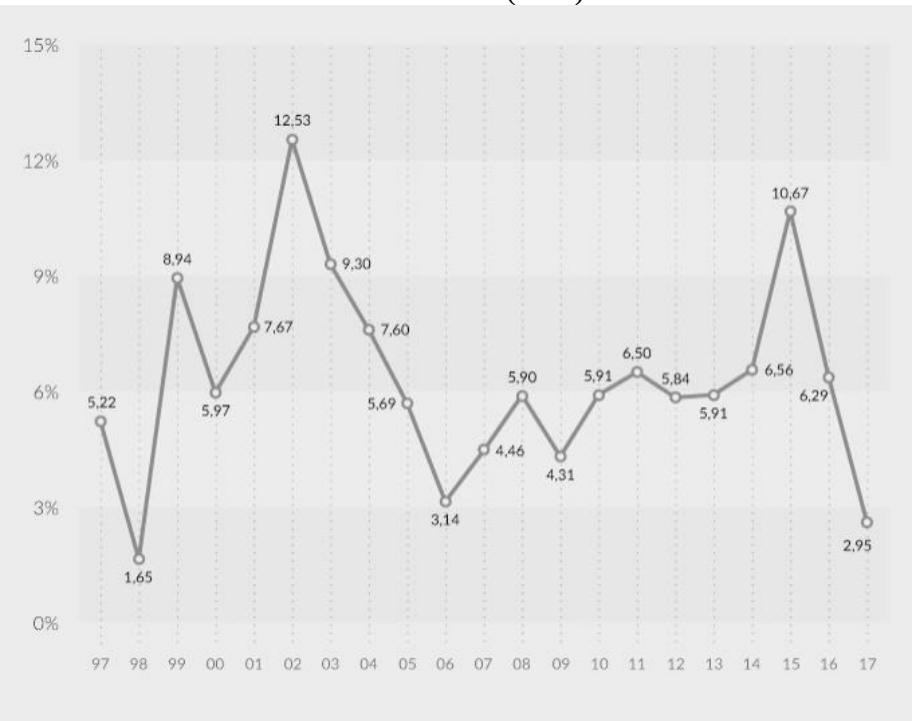
Popular dissatisfaction with President Dilma's government began in mid-2013 with a series of protests across the country. Initially a student protest against an increase in bus tariffs in the city of São Paulo, the protests multiplied across the country to reflect a deep dissatisfaction over the perceived corruption on construction sites for the World Cup and the Olympic Games (held in 2014 and 2016, respectively), violence levels which had reached an all-time high[4], and the low level quality of public services such as health and education (Gripp, 2013). As a result, approval rates for President Dilma decreased from 55% to 31% (Oliveira and Passarinho 2013).

Parallel to these events, the Brazilian economy, which had experienced extreme growth in the previous decade under the leadership of President Lula, had begun to stagnate. The year of 2013 marked the year inflation began to rise (Figure 5.1) and the GDP growth rate began to drop (Figure 5.2). Thus, 2014 resulted in a hotly-contested presidential election which resulted in the re-election of President Dilma by a margin of less than 3% over the runner-up (TSE 2014). It would later transpire however that, in order to guarantee her re-election, President Dilma had not only concealed the true state of the economy (by refusing to release reports and economic indices during the electoral period), but had also made use of creative accounting maneuvers (in Portuguese, referenced as "*pedaladas*"). These *pedaladas* consisted of taking unauthorized loans from state-run banks to pay for social programs (a total of nearly US$58 billion), giving national

[3] President Dilma Rousseff (2011-2016) was the second president to be impeached since Brazil reestablished its democracy in 1985. Prior to her, President Fernando Collor de Mello (1990 -1992) had been impeached due to allegations of corruption. Former President Collor now holds a seat in the Senate.
[4] In 2013, over 56.000 homicides were recorded. Since then, that number has increased to 59,080 in 2017 making Brazil the 14th most violent country in the world (*Atlas da Violencia*, 2017).

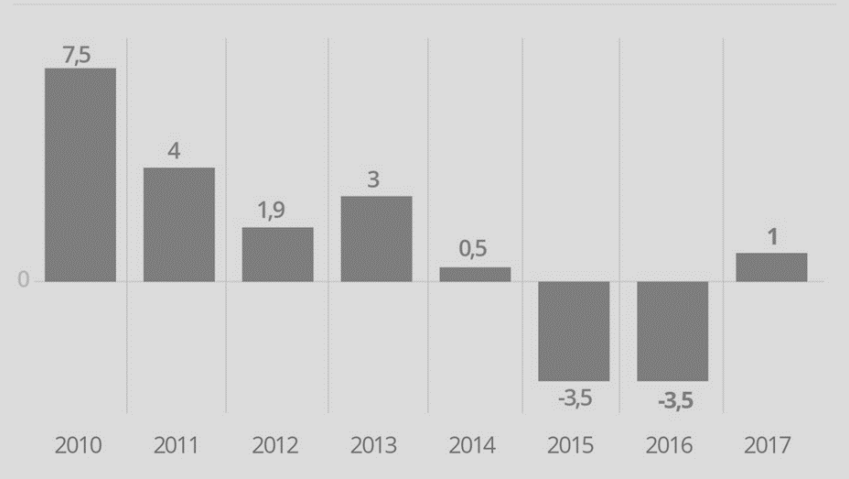
accounts the appearance of being in credit, when in fact they were not[5] (Leahy 2016). Such mishandling of the budget resulted in a sharp increase in inflation rates in 2015 and a negative GDP growth. In order to tackle this budget crisis, President Dilma announced significant budget cuts in the order of approximately US$17 billion (equivalent to R$65 billion; Rapozza 2015). This macroeconomic action resulted in a further drop of President Dilma's approval rates, to 9% at the end of 2015. Less than a year later, in August 2016, the Brazilian Congress would vote to have her impeached over her illegal fiscal maneuvers.

Figure 5.1 – Inflation Rates (1997 – 2017)
Source: IBGE (2017)



[5] Important to note that these fiscal maneuvers are illegal in accordance with the Fiscal Responsibility Law enacted in 2000.

Figure 5.2 – GDP Growth Rates (2010 – 2017)
Source: IBGE (2017)



President Dilma's negative approval rates went beyond her mishandling of the economy. In 2014, during the electoral period, one of the biggest corruption scandals, Operation "Car-Wash"[6] was revealed. The scheme unveiled deep-rooted practices of corruption at Petrobrás, Brazil's largest state-owned oil company, operated by members of President Dilma's political party, the Workers' Party and would eventually lead to her predecessor, President Lula, also a member of her party, eventually being tried and convicted (in 2018).

In the next section, an overview of corruption in Brazil will be discussed.

[6] Investigators named it so, since initially this was an investigation into the dealings of a man named Alberto Yousseff who owned a car wash which was used for a money-laundering schem. This investigation of this scheme led to the discovery of the involvement of several prominent figures, amongst which, key people connected to Petrobrás.

5.2.2. Tracing the Historical Roots of Corruption in Brazil

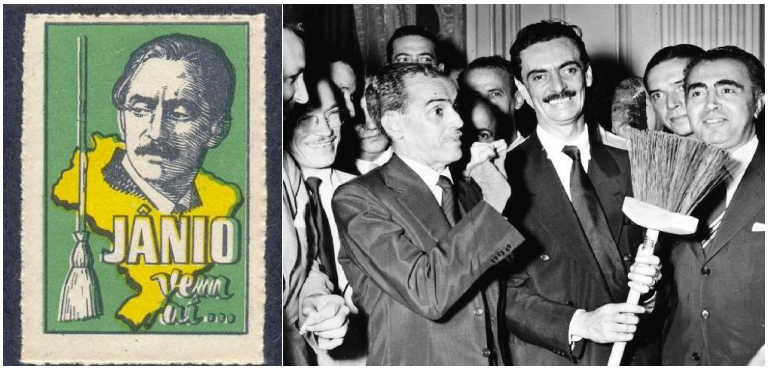
The first records of illegal practices in Brazil date back to the period of Portuguese colonization. The most frequent case was of public officials, in charge of policing the smuggling and other transgressions against the Portuguese Crown, and instead of fulfilling their duties, ended up practicing the illegal trade of Brazilian products, such as spices, tobacco, and gold (Faoro 1987; Buarque de Holanda 2015). It is worth noting that such products could be marketed only with special permission from the Portuguese monarchy but ended up in the hands of smugglers.

Later, when the Republic of Brazil was declared in 1889, other forms of corruption, such as electoral frauds and the concession of public constructions, would emerge. The latter involved winning bids for contracts from Government to carry out public constructions. Regarding electoral frauds, a common occurrence were patronage practices, especially in the countryside and in poorer regions of Brazil. In exchange for votes, powerful landowners would extend benefits to these people. In fact, it is interesting to note that this is still a commonplace practice in Northern regions of Brazil.

Corrupt practices can therefore be traced a very long way back. In the political domain, one of the first registers of fraud dates back to 1929 during presidential elections held that year. Two candidates, Júlio Prestes and Getúlio Vargas were disputing elections. The former won elections by a considerable margin. But, due to the greater political support the latter had, election results were changed in order to favor him, who then became president in 1930 but refused to leave office at the end of his term, inaugurating a dictatorship period until 1945, which ended with his suicide.

Corruption had become so widespread in the political sphere, that in the early 1960s, presidential candidate Jânio Quadros used a broomstick as his campaign motto, alluding to the fact that he would "sweep corruption" from governmental institutions (see Figure 6.3). He went on to win that election and took office in January 1961. He remained in office however only 8 months, resigning in August 1961. His vice-president, João Goulart, would then take over, only to be deposed via military coup in 1964 under the auspices of being friendly towards communist regimes.

Figure 5.3 – Campaign Slogan for Janio Quadros in 1960



The military dictatorship (1964-1985), was also not a corrupt-free period. Though censorship prevented such news from reaching the general population, there were accusations against the military. One such instance involved accusations of trading items that had been illegally smuggled into Brazil and then apprehended by the military. A certain group, led by Captain Ailton Guimarães Jorge, then commercialized these items. Captain Guimarães Jorge would later leave the Armed Forces and become a prominent figure in gambling schemes (which is illegal in Brazil) (Rodrigues 2015).

More recently, documents released in 2014 and 2015 by the Obama administration indicated that the United States government was aware of ongoing acts of corruption during the military dictatorship. Several telegrams sent from the American Embassy in Brazil to Washington at the time reveal exchange of favors and nepotism, in addition to a US$10 million corruption scheme led by the Minister of Planning, Delfim Netto (Sayuri 2018). Research by Martins Filho (2017) indicated that the British government also had evidence of corruption in Brazil during the military dictatorship. Martins Filho uncovered documents that suggest that members of the Brazilian Navy had profited from the purchase of a fleet of ships from British company, Volper, in 1970.

Moreover, it was during the military dictatorship that construction companies first formed a cartel and, with the political heads' consent, split construction projects between them in exchange for kickbacks. Campos (2012) found concrete evidence to support claims that two of Brazil's largest construction companies, Odebrecht and Camargo Corrêa, both led corruption schemes at Petrobrás during that time. These schemes would then later expand and consolidate, only to be uncovered in 2014 during Operation Car-Wash.

This brief history reveals that corruption is not a new phenomenon in Brazilian political spheres. However, as the next section will demonstrate, such schemes seem to have evolved and become more elaborate.

5.2.3. Corruption in Brazil Today

The return to democracy in 1985 unfortunately did little in terms of curbing corruption. Since the onset of democracy, every single administration has been plagued by accusations of

corruption, starting with President Fernando Collor de Mello (1990 – 1992), the first directly elected president after the end of the military dictatorship, who was impeached under accusations of illegally appropriating public funds. Former President Luiz Inácio Lula da Silva (2003 – 2010) was jailed in 2018 due to corruption charges brought against him in 2016.

Brazil was considered the 96th least corrupt country in the world in 2017 (Transparency International 2017), up from 54th in 2003 (Transparency International 2003) when the Workers' Party first came to power and immediately prior to the implementation of the Transparency Portal. Moreover, in a report by FIESP (2010), it was estimated that the cost of corruption in Brazil was in the order of 2.3% of the Brazilian GDP annually between 2005 and 2009. By their estimate therefore, corruption in Brazil had cost public coffers R$69.1 billion in 2008. In a previous report, released in 2006 (FIESP 2006), the cost of corruption had been estimated as the equivalent to 1.35% of the GDP in 2005 (the equivalent to R$25.6 billion that year). Thus, according to their analysis, the level of corruption in Brazil had increased significantly.

According to CNI – National Federation of Industry (2016, *Confederação Nacional da Indústria*), 65% of Brazilians consider corruption to be an extremely serious problem. In the 2013 Global Corruption Barometer (Transparency International 2013), 70% of Brazilians surveyed also reported it as a very serious problem, whereas 55% of respondents affirmed that the actions undertaken by government to combat corruption had been ineffective. Another interesting piece of data from this same survey concerns where citizens believe are the biggest sources of corruption; 81% believed it was the political parties, followed by the 72% affirming it was the legislature (see Table 5.1).

Table 5.1 - Biggest Sources of Corruption in Government
Source: Global Corruption Barometer (2013)

Political parties	**81%**
Legislature	**72%**
Police	**70%**
Medical and health services	**55%**
Judiciary	**50%**
Public officials/ civil servants	**45%**
Media	**38%**
Business/ private sector	**35%**
NGOs	**33%**
Religious bodies	**31%**
Military	**30%**

Table 5.2 demonstrates an overview of the main corruption schemes uncovered since the 1990s. The review of such cases gives an insight into how corruption schemes operate in Brazil and supports the perception that political parties and the legislature are the main sources of corruption.

The overview demonstrates that schemes became more elaborate and widespread as time progressed. Unlike the schemes detailed during the military dictatorship in the previous section, the schemes detailed in Table 5.2 involve a range of different groups of interest from several areas of government (the legislature, different Ministries and agencies). In addition, most of the schemes outlined follow the same pattern of cheating bidding processes and engaging in kickback schemes.

Table 5.2 – Overview of Main Corruption Scandals in Brazil

Corruption Scheme	Details	Convictions	Year Revealed	Amount [7]
PC Farias	Scheme involving former President Fernando Collor embezzling money from government, along with close allies. President Collor was impeached in 1992 but never convicted. He currently holds a seat in the Senate, having been first elected in 2006.	0	1992	US$1 billion
Budget Dwarves (*Anões do Orçamento*)	37 congressmen were involved in a scheme that meant exchanging budget amendments for future projects for kickbacks. In 2016, it was revealed through Operation Car-Wash that this scandal led Brazil's largest construction company to refrain from dealing with congressmen and instead deal directly with the President (from 2004 onwards).	0	1994	US$100 millions
Marka Bank	Luiz Bragança, acquainted with Central Bank's chief, Francisco Lopes, illegally traded US dollars at a rate that was 36% lower than market rates, costing public coffers several millions.	3	1999	US$760 millions
Health Vampires (*Vampiros da Saúde*)	Scheme consisted of a kickback scheme in the Ministry of Health. Contracts were allocated to preferred suppliers in exchange for bribes. 42 people were charged with corruption charges, amongst whom, the Ministry of Health at the time, Humberto Costa.	0	2004	US$900 millions
Mensalão	A payment scheme spearheaded by the ruling Workers' Party, who paid Congress members R$30,000 a month in exchange for voting favorably for legislation supported by them. Funds came from state-owned companies' advertising budgets.	24	2005	US$55 million
Razor Operation (*Operação Navalha*)	Kickback scheme involving a construction company, Gautama, to obtain contract advantages involving the Minister of Mines and Energy at the time, Silas Rondeau. Bribes were paid to	10	2007	US$15 million

[7] Amounts are an estimate based on investigation files and news reports. They have been converted to US dollars based on the exchange rate at the time.

	public officials. In total 47 people were involved.			
Sand Castle (*Castelo de Areia*)	Bribes, kickbacks, licitation fraud, and money laundering scheme involving construction company Camargo Correa and several high-level politicians, including President Michel Temer (2016-2016). The investigation would later be buried by the Supreme Justice Court on the basis that the evidence was inadmissible in court.	0	2009	N/A
Car-Wash (*Lava Jato*)	Corruption scheme involving several political parties and construction companies, in addition to Brazil's largest state-owned company, Petrobras.	180	2014	US$12 billion[8]
Zealots (*Zelotes*)	Corruption scheme at Brazil's Administrative Council of Tax Appeals (CARF), an agency within Brazil's Finance Ministry. CARF rulings fraudulently reduced or cancelled tax fines imposed on certain companies in exchange for bribes.	9	2015	US$240 million

Two corruption scandals in the Table above deserve more detailed attention: *Mensalão* and Operation Car-Wash. In the case of *Mensalão,* the scandal broke immediately after the ruling Workers' Party implemented two important strategies in their effort to curb corruption: the creation of the Comptroller General of the Union (CGU) via Law No. 10.683 in 2003, and the deployment of the Transparency Portal in 2004 as a platform for making government spending more transparent. This case also marked the first time high-level politicians were so widely convicted. This was largely due to the great deal of attention it received by both media and civil society, a fact that would serve as a lesson for Operation Car-Wash investigations.

Operation Car-Wash is also worth noting due to the fact that, quite unlike previous investigations, though uncovered in 2014, at the time of finalizing this thesis, it still showed no

[8] Investigation is still ongoing, so this amount is expected to increase.

signs of slowing down. It is certainly the biggest corruption case to date in Brazil due to the amounts and number of people involved. It was also deemed the second biggest corruption case in the world by Transparency International (2017).

The investigation has already seen nearly two hundred convictions, amongst whom high-profile executives and politicians, and former President Luiz Inácio Lula da Silva (2003-2010). As a result of this investigation, over R$40 billion[9] are due to be returned to public coffers in the form of restitutions and fines (MPF 2017). The richness of the information obtained as a result of the investigation material reveal the extent of the scheme, going beyond Petrobrás and spanning at least a decade. In a statement to the courts, Emilio Odebrecht, who presided over the largest construction company in Brazil until 2001, revealed:

> *"What we have in Brazil is not something that has been going on for 5, 10 years. It is a 30-year-old system. Everything that is taking place is institutionalized. It was something normal, due to the number of political parties which were fighting for political appointments? No, everyone knew that it wasn't […]. There, the political parties designated people in order to capture funds for the parties, for the politicians. And that is something that has been going on for 30 years."*[10]

In the same statement, he went on to declare:

> *"Effectively, things have gotten much worse […]. There was nothing [in the past] like today in politics, generally speaking."*

Emilio Odebrecht's statement confirms the notion that although corruption has always existed, the mechanisms for it got progressively more sophisticated and institutionalized, despite

[9] The equivalent to approximately US$12 billion.
[10] Statement made in September 2017. Translated from Portuguese by author. Recordings for all statements as part of this investigation are available at: https://www.youtube.com/user/MultiEstadao/videos

the extensive anti-corruption legal framework established during the course of the Workers' Party government[11]. The cases outlined in Table 5.2 also largely indicate a history of impunity. With the exception of the Car-Wash Operation, conviction rates have remained significantly low. This will be reviewed in the next section of this chapter.

5.2.4. Anti-Corruption Legal Framework

As discussed in Chapter 3, corruption can take several forms, amongst which offering and accepting bribes. In Brazil, such acts are illegal, in accordance with the Penal Code established in 1940. According to Leite (2016), articles 317 and 333, specifically deal with the issue of passive and active corruption. The current Brazilian Constitution also deals with the subject under Article 37, stating that those involved in misconduct will have their political rights suspended (Leite 2016). Since then, existing legislation has considerably expanded resulting in an extensive legal framework. This section of the chapter will thus review some of the important advances in this regard.

Praça and Taylor (2014) state that the first significant advancement in consolidating an anti-corruption legislation came in 1998, with the enactment of the Money Laundering Law (Law N. 9.613/1998). This followed a period of economic and monetary stability during the presidency of Fernando Henrique Cardoso (1995-2002) which led to reform of the state and more emphasis on performance (Bresser-Pereira 1996). Such reforms, coupled with technological innovations at the time, i.e. the Internet, led to a shift towards a more transparent environment.

[11] Worker's Party government lasted fourteen years: President Luiz Inacio Lula da Silva ruled from 2003 to 2010, and President Dilma Rouseff ruled from 2011 to 2016, when she was impeached, as previously reviewed.

The late 1990s saw several local spheres of government (state and municipalities), such as the richest state in Brazil, São Paulo, heavily indebted due to both mismanagement and corruption. Over 55% of municipalities were in deficit by 1998 (Alves and Heller 2013). This resulted in the enactment of Law N. 101 in 2000, the Fiscal Responsibility Law (FRL), which "limits state debt levels, sets rigid limits on spending, and requires the provision of transparent fiscal information to the public" (Praça and Taylor 2014: 10). Though devised as a form of fiscal policy, the "transparency" requirement of it, also served as a form of restraining corrupt practices (Khair et al. 2006; Leite 2016). To this extent, Alves and Heller (2013: 89) affirm that "for the first time in Brazilian history, LRF made executives (mayors and governors) personally liable for noncompliance".

Praça and Taylor (2014: 11) add that the enactment of the FRL can be considered a landmark in terms of anti-corruption efforts since it resulted in changes across entire government institutions: "with the enactment of the FRL, the TCU[12] (and its state-level counterparts) has been forced to reorganize internally, both creating new institutional structures, such as ombudsman's offices and training academies, and establishing new routines, such as permitting more civil society participation and providing better access to information". They further state that the FRL would later act as the basis for the creation of the Transparency Portal in 2004 during the Lula administration (2003-2011).

Following the intense media scrutiny after the *Mensalão* scandal, civil society became more involved and local NGOs that had been founded in the 1990s, such as Transparência Brasil, the Brazilian chapter of Transparency International, gained prominence. Such strong popular

[12] Federal Court of Accounts (*Tribunal de Contas da Uniao*), an extension of the legislative branch, responsible for auditing accounts of the executive branch.

pressure resulted in the enactment of the Transparency Law (LC 131/2009) in 2009. Following a series of political and corruption scandals in both the Lower House of Chambers and the Senate, popular dissatisfaction grew with the legislative branch of government. A bill, the Transparency Law (LC131/2009), which had been in limbo for over five years, was quickly brought to the floor for voting and was quickly enacted (Alves and Heller 2013). This law expanded the transparency framework and resulted in the requirement that budgetary information be made available on a real-time basis. This framework would later be consolidated in 2011 when the Access to Information Law was enacted (L. 12.527/2011). It established the basis for expanding the transparency framework in Brazil, topic of section 5.4 in this chapter, bearing a direct effect on the information system at Agency X.

Popular pressure would also result in the enactment of a very important piece of legislation in 2010, the Clean Slate Law (LC 135/2010), which banned politicians who had been convicted of a crime in the appeals court to run for office. Perhaps the most significant aspect of this law is that it was the result of direct popular initiative, via a petition signed by 1.3 million citizens. This again would be the case in 2013, as popular uprisings resulted in the expansion of the anti-corruption legislation.

That year, as reviewed previously, a series of protests took place across the country. Citizens were dissatisfied with growing expenditure on infrastructure in preparation for the World Cup (to be held in 2014) and the Olympic Games in Rio de Janeiro (to be held in 2016). The perception was that such investments not only meant neglect of basic public services, such as health and education, but also that illegalities were taking place and funds were being diverted (a fact that would later be confirmed via the Car-Wash investigation). As a way of placating the population and protests and to give government the auspices that it was combatting corruption, the

Anti-Corruption Law (L. 12.846/2013) was enacted, followed by the Criminal Organizations Law (L. 12.850/2013). A very important step in advancing anti-corruption charges, the former established punitive damages to those involved in corruption (such as fines to the tune of 20% of profits of companies).

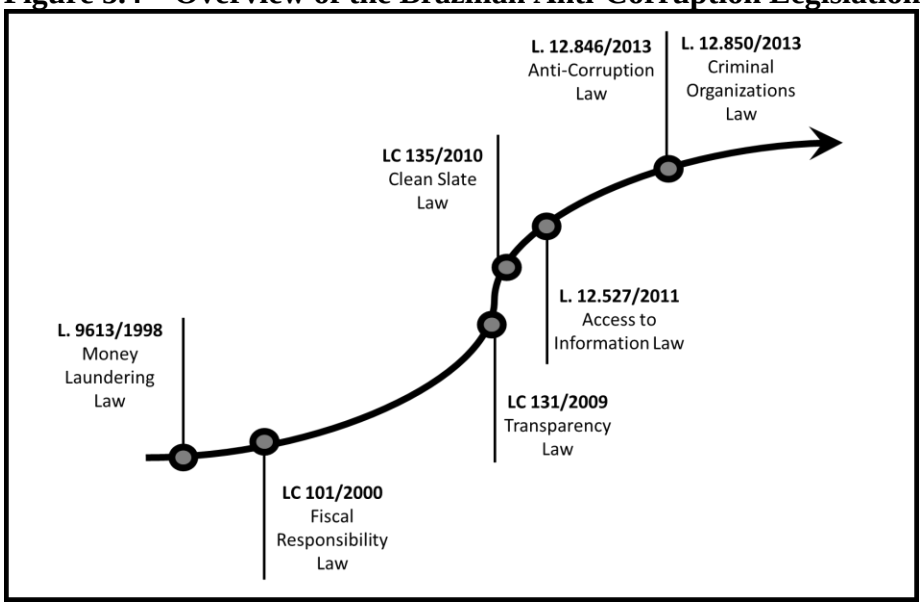
The latter, on the other hand, set out a framework for plea bargaining and leniency in exchange for collaborating with investigations. Although a measure that had been amply used internationally, this was a novel strategy in Brazil and would later prove to be key in advancing the Car-Wash Operation investigation[13]. In the words of a public prosecutor interviewed:

> *"A combination of factors allowed the Car-Wash to proceed and not die as previous investigations had. The first is the the level of attention these investigations have received. When the media follows [the case], things flow better. The second was the use of plea bargaining [in exchange for leniency]. It establishes a "contract" between the State and the accused. It allowed us to gather information quickly, and move forward much faster. And as investigations progressed, others involved came forward wanting to make a deal to avoid jail time, giving us an insight into the operation that we would not have gained otherwise".*

In summary, Brazilian legislation has advanced significantly in terms of establishing an anti-corruption framework (see Figure 5.4) and, as the brief history presented above shows, mobilization by the civil society has played an important role in consolidating such advances.

[13] Data obtained as the result of an interview that was conducted with a public prosecutor directly involved in the Car-Wash investigations in April 2018.

Figure 5.4 – Overview of the Brazilian Anti-Corruption Legislation



5.2.5. A Culture of Corruption

Matta (1986) explains that Brazilians are known for their "*jeitinho brasileiro*" (loosely translated as "little Brazilian way"). This expression characterizes a Brazilian trait, which means finding creative ways to dodge the bureaucracy and excessive regulation. Habib (1994) adds that "*jeitinho brasileiro*" is a form of circumventing the law and an institutionalized practice in Brazil, leading to the claim that Brazilian corruption is a culturally embedded phenomenon.

This is exemplified by research that reveals that 35% of Brazilians affirm they have already bribed a police officer to get themselves out of being fined (Nóbrega 2016). This prevalent perception that Brazilians are predominantly corrupt is exemplified by a survey in Brazil by Transparency International (2012), which "indicated that while respondents do not report high incidence of personal engagement in corruption, they do indicate a suspicion that others are less honorable". Thus, Brazilians hold themselves in higher regard than they do others. Yet research

shows that practices of little acts of wrongdoing are quite widespread. For example, Nóbrega (2016) cites a Vox Populi survey whereby 23% of respondents affirmed that avoiding a fine is "not a big deal". Another survey revealed that 35% of respondents believed that there are practices that are "a little wrong", such as the act of avoiding to pay taxes when they are too high, but that is not corruption (Della Barba 2012). This form of rationalizing about acts of wrongdoing can be explained through the theoretical framework presented in Chapter 3 of moral disengagement (MD) (Bandura 2016). It is not however constrained to society. They can also be observed in public institutions. Research by UNB (2008, in Nóbrega 2016) reveals that 22.5% of civil servants have already admitted to committing an illegal act.

Analyzing testimonies given to investigators and public prosecutors in relation to the Operation Car-Wash[14], it was possible to identify an ongoing pattern of MD mechanisms as part of their discourse. As previously presented, Operation Car-Wash has resulted in a very rich dataset, consisting of hundreds of documents and videotaped testimonies, which allowed for a unique insight into the minds of corrupt individuals and how he or she justifies and rationalizes the act of corruption. By going through this dataset, it was possible to observe an extensive array of examples of how individuals made use of cognitive mechanisms in order to reframe their actions. Some of the examples can be observed in Table 5.3.

An interesting observation is that out of Bandura's (2016) eight cognitive mechanisms for moral disengagement, three were not observed: distortion of consequences, dehumanization, and attribution of blame. At the victim *locus*, these involve dehumanizing victims, which, in the context of corruption, could be categorized as public coffers or perhaps even civil society, which

[14] These documents can be consulted on the Public Prosecutors' website: www.lavajato.mpf.mp.br. Videos of the testimonies can be visualized at https://www.youtube.com/user/MultiEstadao/videos.

are “invisible” or “unseen” entities. This therefore might explain why such mechanisms were not observed.

The fact that MD mechanisms were observed in the context of this widespread corruption scheme, which has proven to expand across several political spheres and institutions, suggests that such mechanisms will be found in the context of Agency X, hence why I have taken the time to detail this finding here.

The next section of this chapter will review the institutional design of the Brazilian government so as to further gain an understanding of the context in which Agency X is inserted.

Table 5.3 – Examples of Moral Disengagement in the Context of Operation Car-Wash

Categories	Definition	Examples
Moral Justification	Moral, social and economic justifications are used to sanctify injurious practices and decisions, and to challenge regulations. Harmful actions are regarded as serving worthy purposes and actors reward themselves for performance.	"I did it in the spirit of democracy!"; "[My job] is not the reason behind electoral corruption"; "I never gave up on my dreams. I embraced all my opportunities"; "I knew that in order to advance [in my career] compromises would need to be made"; "It has always existed, since my father's time"; "I am a family man"
Advantageous Comparison	Comparing or constrasting harmful activities to actions that appear benign, of little consequence, or of lesser negative effect.	"We are not corrupt or money launderers [in comparison to other types of corruption]"
Euphemistic Labeling	The use of sanitizing, convoluted, and innocuous language to make harmful decisions personally and socially acceptable.	"I received a remuneration. . . I received "x" as a salary [in reference to bribes received]"; "It's 'extra-legal' ways"; "I didn't receive a bribe. I was paid for my work"; "Yes, a mistake was made. But it was a contained mistake"; "They're problems of a political nature"
Displacement of Responsibility	Evasion of personal accountability for harmful conduct and decisions by displacing responsility on others (e.g. manager or authority). As such, they are not the actual agent of their actions. May intentionally keep themselves uninformed.	"A request from the Minister, what do you do?"; "I resisted, I didn't want to do it [suggesting he was forced]"; "The president told was that this was the way it was going to be"
Diffusion of Responsibility	Personal responsibility is diffused through group decision-making, division of labor, or by attributing own behavior to the behavior of others (behavior mimic). Attention is shifted from the morality of action to operational details and efficiency of a specific job.	"Is it wrong? Yes. Is it deplorable? Yes. But it's [kickbacks] generalized in the world"; "Everyone knew what was happening"

5.3. The Organizational Context: The Brazilian Federal Government

The Brazilian government, as established by the 1988 Constitution[15], is composed of the Union, States, Federal District, and municipalities, and power is divided between three branches: executive, legislative, and the judiciary.

The federal government sphere comprises 29 Ministries[16] and employs over 770,000 people (see Appendix V). Each Ministry serves as an umbrella for a complex structure composed of agencies, secretaries, councils etc., dispersed across the country and overseas (see Figure 5.5 for an example).

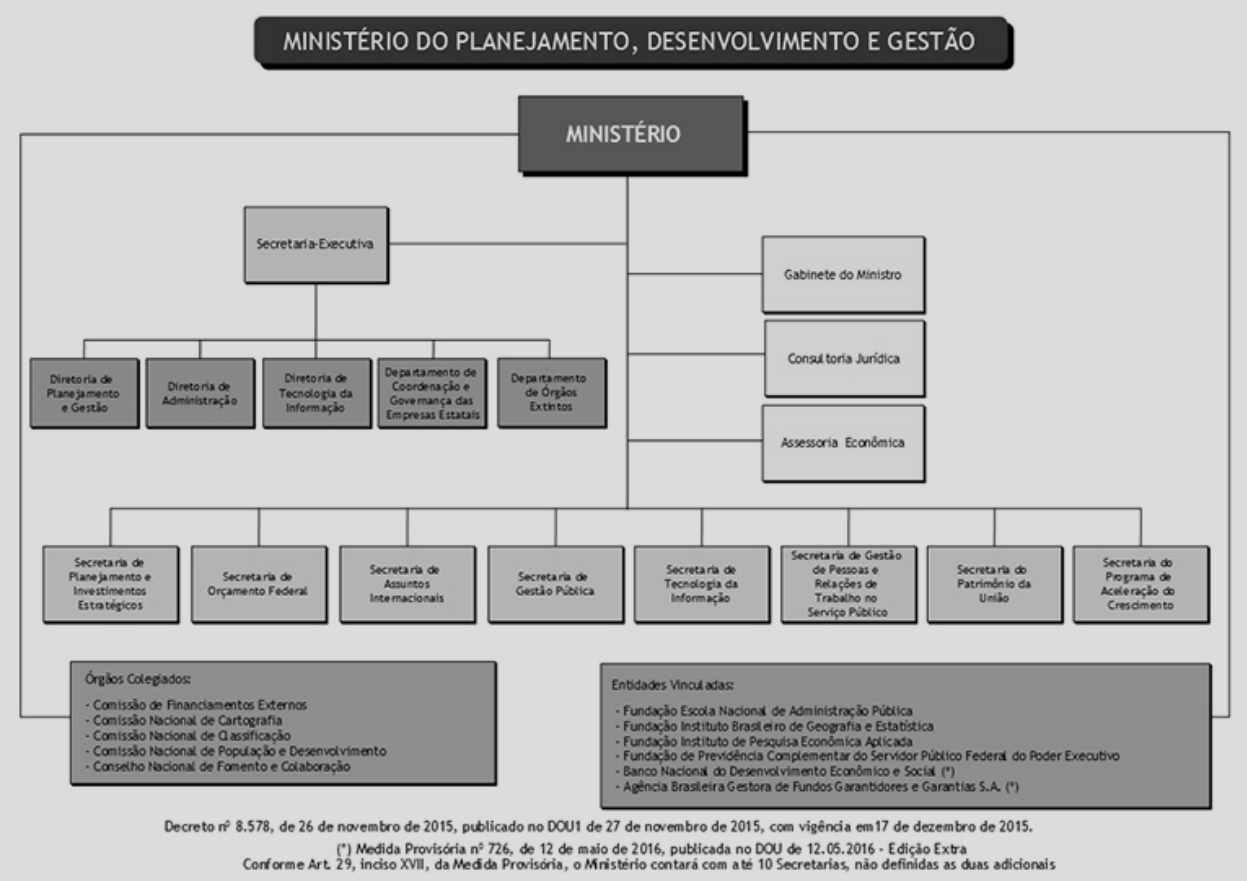
Adding to these institutions are also a series of state-owned companies, such as Petrobrás and the Bank of Brazil. The Brazilian government owns and operates a total of 418 state-owned companies which employ over 500,000 people (Prado 2017). All of this makes for a very complex structure which often translates into government agencies' inability to converse with one another and turning integration between them into a challenge. This has reflected on how transparency has been deployed throughout the federal government, which aimed at integrating this complex structure. Despite this, the transparency agenda in Brazil aims to achieve precisely that, as will be reviewed in subsequent sections of this chapter.

Such a large governmental structure also presents a challenge to oversight institutions, responsible for ensuring that all those operating under all three branches of government – civil servants, ministers, members of congress and the judiciary – adhere to the legal framework in

[15] The current Brazilian Constitution was established in 1988 after the end of the military dictatorship (1964-1985). It is the seventh constitution in Brazilian history since declaring independence from Portugal in 1822.
[16] In May 2006, when Dilma Rousseff was initially removed from office, then interim President, Michel Temer, cut the number of Ministries from a historical record of 32, to 29.

place. It has also resulted in a very complex web of oversight institutions. This will be reviewed in the next section.

Figure 5.5 – How a Ministry is Structured
Source: Ministry of Planning, Development and Management (2018)



5.3.1. Accountability and Oversight Institutions

The 1988 Brazilian Constitution established Brazil's modern web of accountability institutions and the basis for Brazil's anti-corruption legislation. Currently, Brazil has four oversight institutions responsible for investigating acts of misconduct and applying sanctions:

(1) *Ministério Público Federal* (Federal Public Prosecutors' Office - MPF): considered the "fourth branch of government", the Public Prosecutor is the main enforcer of political law, "which granted it enhanced authority to act against corruption and misuse of public funds" (Carson and Prado 2016: 20). Aranha (2018: 8) adds that this institution "is the most unusual accountability institution in Brazil and assumes the main role when it comes to fighting corruption in the judicial arena. It is a prosecutorial body, formally independent of the other three branches of government, with guaranteed budget and career incentives set with almost no outside interference".

(2) *Tribunal de Contas da União* (Federal Audit Court - TCU): As part of its oversight and monitoring activities, the TCU is responsible for assisting Congress "in the preparation and execution of the federal budget, inspects annual financial reports from all offices of the public administration, and approves the hiring, retirement, and pension policies for all civil servants" (Speck 2011).

(3) *Polícia Federal* (Federal Police Department - DPF): responsible for criminal investigations under federal jurisdiction. Carson and Prado (2016: 30) affirm that "it is subordinated to the Ministry of Justice" and has, in the past twenty years, taken on the role of investigating corruption.

(4) *Controladoria-Geral da União* (Office of the Comptroller General - CGU). Officially renamed in May 2016 to Ministry of Transparency, Fiscalization and Control (though it is still referred to as CGU), it is part of the executive branch and, as such, retains a degree of independence. It is responsible for "tasks of internal oversight, inspections, ombudsman units, and preventing corruption. In addition to overseeing the use of public funds and initiating audits" (Carson and Prado 2016: 28), CGU is also

responsible for managing the Transparency Portal, as will be covered in the next section of this Chapter.

Leite (2016) adds three more organizations responsible for ensuring adherence to the legal framework: the Judiciary branch, COAF (Control for Financial Activities Council[17]), and Parliamentary Commission of Inquiries (CPI). In the case of COAF, it is situated under the Ministry of Finance and is responsible for investigating money laundering operations. CPIs, on the other hand, are investigations led by members of Congress. Once formed, its powers are akin to that of the judiciary branch, meaning they can conduct testimonies, apprehend documents and properties, and even sentence those investigated temporarily to jail.

Although Brazil retains such an impressive number of institutions dedicated towards combatting corruption and the fact that the number of investigations has grown throughout the course of the years (see Table 5.4), corruption levels are still considerably high in Brazil, as reviewed in previous sections of this chapter. One of the reasons appointed for this, is the slowness of its judiciary system (Speck 2011). Data released by the Federal Justice System in 2010 revealed that there were over 10,000 lawsuits that year against public servants and politicians for corruption (Martinez 2012).

[17] In Portuguese: *Conselho de de Controle de Atividades Financeiras*

Table 5.4 - Overview of Operations by the Federal Police Department
Source: Carson and Prado (2016)

	2005	2006	2007	2008	2009	2010	2011
Operations carried out	67	167	188	235	288	270	256
Public servants imprisoned	219	385	310	396	183	124	260
Police officers imprisoned	9	11	15	7	4	5	4
Total persons imprisoned	1,407	2,673	2,878	2,475	2,663	2,734	2,085

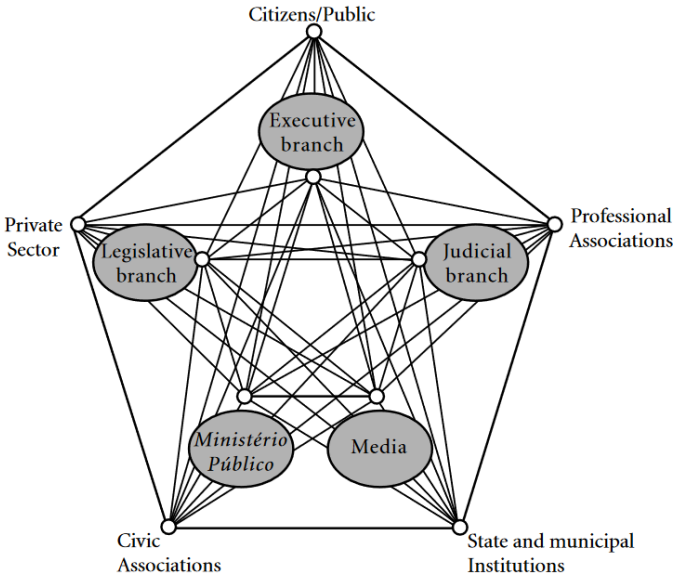
Another issue that negatively impacts the legal process is that all politicians holding office are entitled to a "special standing" in courts (called "*foro especial*"), which means that their cases can only be heard by the Supreme Federal Court, a very slow legal instance due to the number of cases it handles (see Table 5.5). The result is that often, by the time verdicts are finally reached, sentences will have already run out of the statute of limitations and no penalty can be applied (Speck 2011). In Brazil, 45,300 people are entitled to this privileged standing in court. Comparing this number to 2,987 people in China and a single person in Germany who can have a "special standing" gives a dimension of how the rule of law can be distorted in Brazil.

Table 5.5 – Number of Cases Accumulated at the Supreme Federal Tribunal
Source: CNJ (2012)

YEAR	2008	2009	2010	2011
Number of Cases	**128,823**	**102,869**	**109,683**	**102,412**

In summary, Brazil presents a complex a web of accountability institutions (which can be best visualized in Figure 5.6). As Power and Taylor (2011: 14) affirm, "Accountability institutions operate within each of the three branches of government, with further support from autonomous institutions such as the Ministério Público [the MPF] and the media". This, coupled with the extensive anti-corruption legal framework and pressures from civil society have, however, been unable to deter corruption.

Figure 5.6 – The Web of Accountability Institutions in Brazil
Source: Power and Taylor (2011)



5.4. The Transparency Framework in Brazil

As previously discussed, Brazil's transparency framework started to take shape in 2000 with the enactment of the "Fiscal Responsibility Law" (LC 101/2000) which stated that, amongst other things, all spheres of government should abide by certain spending limits or face sanctions. This framework would later expand with the enactments of the Transparency Law (*Lei da*

Transparência), in 2009 and the Access to Public Information Law (*Lei de Acesso a Informações Públicas*) in 2011.

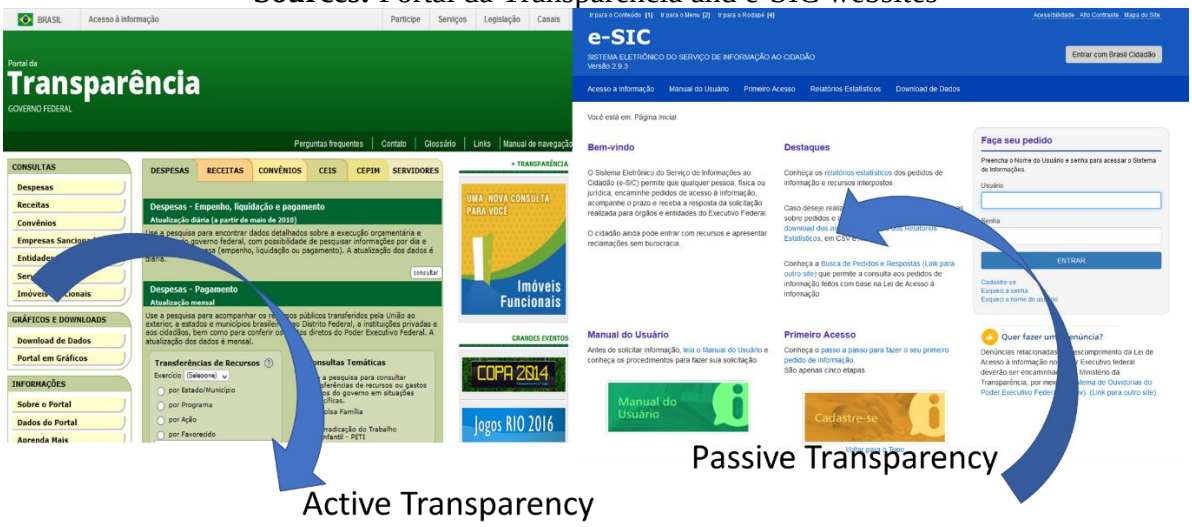
The current framework consists of both passive and active transparency components (Fox 2007; see Figure 5.7). In other words, the federal government, out of its own initiative, makes information available and actively publishes data through its Transparency Portal[18]. The federal government has also established a platform through which citizens can request information (passive transparency). This refers to information that is not actively available, but only on request. The platform through which this is achieved is the e-SIC[19] *(Sistema Eletrônico do Serviço de Informações ao Cidadão*, or Electronic System for Citizen Information Service). Government agencies typically must respond within 30 days to requests.

The official mission of this framework is to combat corruption:

> *"The Brazilian Government believes that transparency is the best antidote against corruption, since it is one more method to induce public managers to act with responsibility; and it allows society, with access to information, to collaborate in the control of rulers' actions, with the aim of checking whether public resources are being spent in the way that they should"* (Transparency Portal).

[18] Available at: www.portaltransparencia.gov.br (in Portuguese).
[19] Available at: https://esic.cgu.gov.br (in Portuguese).

Figure 5.7 - The Brazilian Transparency Framework
Sources: Portal da Transparência and e-SIC websites



Regarding the Transparency Portal specifically, this was established in 2004 and is managed by CGU. The aim of the Portal is to record:

> *"all funds transferred by the federal government to states, municipalities and the Federal District; funds directly transferred to citizens; direct spending of the federal government with procurement or contracts for projects and services, including the spending of each agency with per diems, office supplies, equipment, projects and services; as well as spending through payment cards of the federal government" (CGU website).*

As new laws expanded requirements (reviewed in section 5.2.5), so did the amount of information contained in the Portal (see Figures 5.8 and 5.9). As of 2011, in compliance with the "Access to Public Information Law", in addition to data pertaining to the transfer of funds generally, as mentioned above, it publicizes information specifically regarding salaries/benefits paid to all public servants, at all spheres and levels. In the words of Jorge Hage, former Minister of CGU:

"since May 2010 data on budget executution and revenue collection of the central government is updated on a daily basis. In other words: every transaction completed every day is published and available for constultation on every following morning on the Portal."

Currently, approximately two billion pieces of information are registered on the Portal. Information from all 29 Ministries is fed into the Transparency Portal for the Federal. The information is updated on a real-time basis, as mandated by the Access to Transparency Law. As a result of these efforts, Brazil has consistently ranked high in open government and open budget indices; currently Brazil ranks 7th on the Open Budget Index (2017), ahead of countries like the United Kingdom and Germany (see Figure 5.10).

Figure 5.8 – Evolution of the Transparency Framework in Brazil

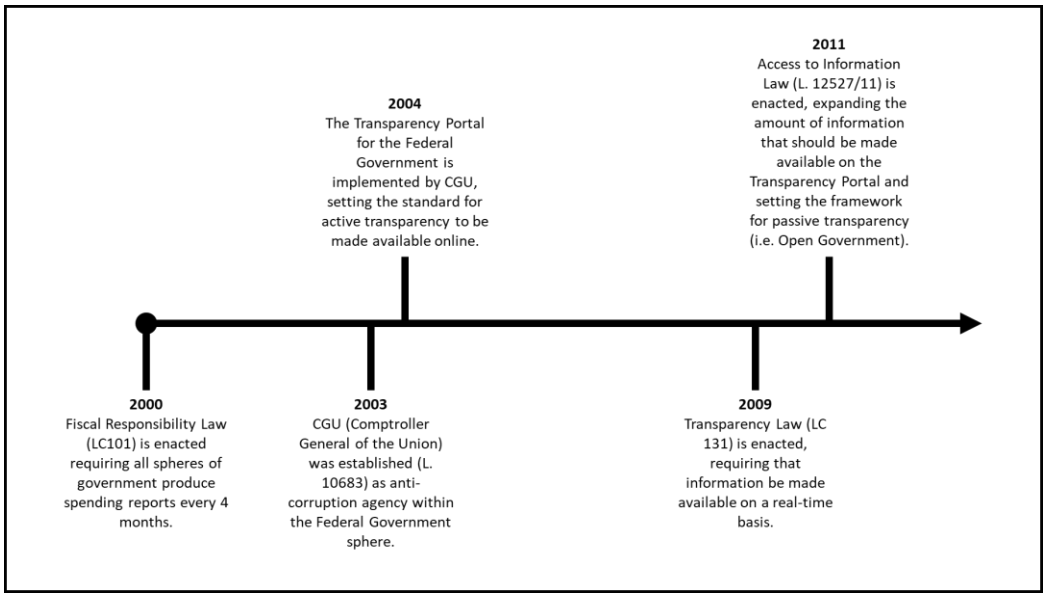


Figure 5.9 - Evolution of Information Available in the Portal
Source: Felix (2011)

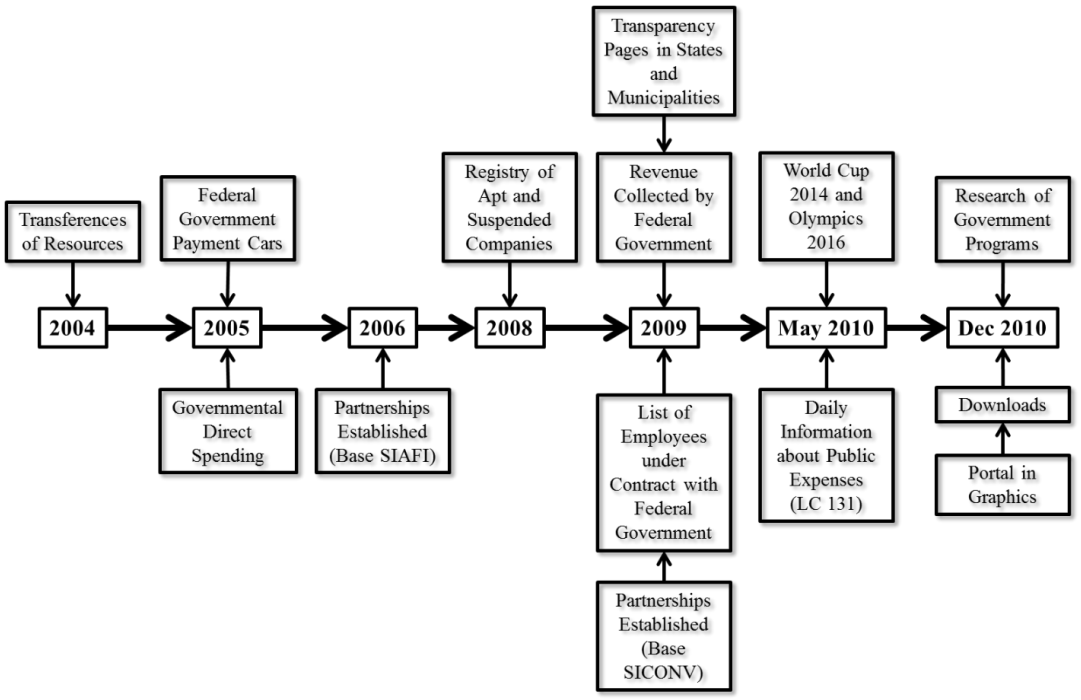


Figure 5.10 - Brazil's Open Budget Index Ranking Evolution
Source: International Budget Partnership (2017)

Though the number of unique users to the portal has considerably grown throughout the course of the years, from 32,163 in 2004 to 1,361,591 in 2015, this is still the equivalent to just over 1% of Brazil's internet users. It is, however, on par with access numbers to government budget websites in other countries[20]. Data by Felix (2015) show that the second most accessed type of information by citizens is the "public expenses" section of the Transparency Portal, precisely the information that is produced by Agency X (see Table 5.6), demonstrating that though the interest is low on the Portal overall, the budget execution is one of the sections that most attracts attention.

Table 5.6 – Transparency Portal Information Accesses (Non-Unique Users)
Source: Felix (2015)

Module	Accesses in 2014
Civil Servants	85,623,543
Public Expenses	17,923,874
Contracts	4,392,765
Transparency in States and Municipalities	3,657,133
Sanctioned Companies Record	2,333,729
World Cup 2014	1,720,456
Revenue	577,788
Expulsions	522,893
Insurance Benefits	350,939
Record of Prevented Companies	269,157
Total of pages visited in 2014	***154,798,818***

[20] In the United Kingdom, the average number of unique users to its government budget website in 2016 equated to approximately 0.002% of its Internet users (source: data.gov.uk). In the United States, during that same period, the average number of unique users equated to 0.019% of its Internet users (information obtained via the Freedom of Information Act).

Research by Freire and Batista (2016) reveals that 64% of users who accessed the Transparency Portal, did so for personal reasons, whilst 26% were professionals (journalists, NGOs, public officials). Their research also revealed that 82% of citizens believe that the Transparency Portal is an effective tool for combatting corruption. This high-level of expectation makes this thesis even more relevant, since, as discussed both in previous chapters and throughout this present one, transparency has had a limited effect on curbing corruption. In defense of the Transparency Portal as an anti-corruption mechanism, Correa (2015) cites a specific instance when the misuse of government credit cards came to light precisely because that information was available for consultation by a group of journalists who publicized this fact. As a result, public officials refrained from using the credit cards and expenses decreased by nearly half, from just over R$80 million in 2010 to approximately R$43 million in 2017 (Viapiana 2018). Such conclusion, that transparency acted as a deterrence mechanism is superficial since it fails to consider why officials stopped using the credit cards, i.e. they simply migrated to other forms of paying for personal expenses, such as via contracting and invoicing. And, as will be discussed via the example of Agency X, invoices can be manipulated to reflect other forms of expenses.

In summary, the transparency framework in Brazil comprises both active (the Transparency Portal) and passive transparency (e-SIC) components. Though Agency X is subject to having to respond to requests that originate via the e-SIC system (the passive aspect), there are no records of it ever having done so. In addition, the focus of this thesis is the "active" component of transparency and how the information is produced. As such, this will be the focus of subsequent sections of this chapter. The next section will detail further how the Transparency Portal functions.

5.4.1. Sources of Information

The Transparency Portal pulls its information from two main systems: SIAFI – Integrated System of Financial Administration (*Sistema Integrado de Administração Financeira)*, and SIAPE – Integrated System of Administration of Human Resources" (*Sistema Integrado de Administração de Recursos Humanos*) (see Figure 5.11).

SIAPE is a human resources management tool. Managed by the Ministry of Planning, Budget and Management, it holds information regarding wages and pay slips for all the civil servants working in the federal government sphere. The system was created in 1989, and all of its information is supplied to the Transparency Portal. Agency X does not utilize this system, hence why it will not be reviewed in greater detail here.

Figure 5.11 - The Transparency Portal's Data Sources

SIAFI, on the other hand, is managed by National Treasury Secretary (STN) and constitutes the main source of information for the Transparency Portal (see Figure 5.12). It was created in 1987 and holds budgetary and financial information for the federal sphere of government. Since 2015, it has been rolled out to several government agencies so that financial information can be inputted directly on it by various agencies and immediately reflected on the Portal, attending to the current legislation that establishes that information be made available in real-time. To this extent, the system was implemented at Agency X in January 2015, as will be reviewed in Chapter 6.

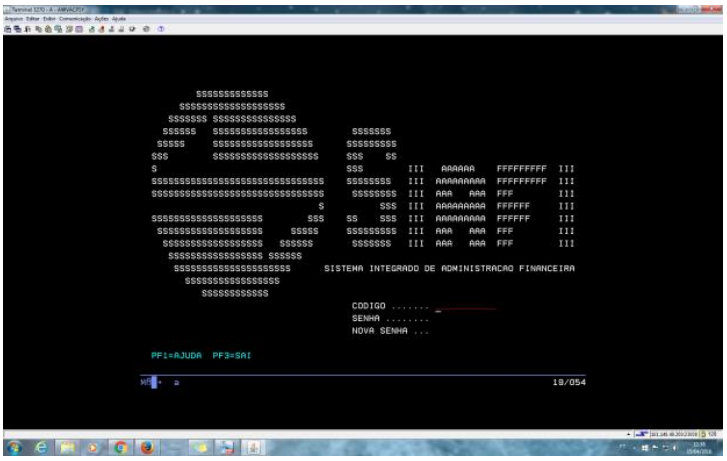
Araújo (2008) states that the official mission statement for SIAFI is to provide organizations across the federal government with adequate mechanisms for controlling their budgetary execution and consolidate financial information for all agencies within one single system. According to official documentation obtained regarding this system:

> *"SIAFI is the main management instrument used by the Secretary of National Treasury (STN), organization that is responsible for the management of the Treasury's financial resources . . . SIAFI is used by all agencies within the Ministries as a financial management instrument to process in an integrated way, and on-line, its budgetary, financial, and patrimonial execution" (Internal Manual for SIAFI).*

He also states that SIAFI, as a unified and centralized system, mitigates the risk of corruption. However, he also recognizes that there have been challenges in migrating the entire federal government sphere onto SIAFI. The major one that Araújo (2008) alludes to is the existence of many different technical systems in use across different agencies, each with its own language and codes. This heterogeneity poses a major challenge in attempting to unify systems. Agency X itself utilizes a separate internal system (IntSys), which is exclusive to the Ministry under which

Agency X is situated. Both systems, IntSys and SIAFI, constitute the technical artefact elements of the information system which is one of the focal points of this research. The other element of the information system are Agency X's people. An overview of the agency and its people will be reviewed in the next section of this chapter.

Figure 5.12 - Screenshot of SIAFI Login Page
Source: STN



5.5. The Organizational Context: Agency X

The agency at which transparency was observed (hereby referred to as Agency X) was structured in the 1960s. It is situated within one of 29 Ministries in the federal government. Its official mission is to aid in the procurement of services and supplies, fielding purchase requests from various other agencies within the particular Ministry which they support. As such, its main responsibilities include: the management of activities related to procurement (i.e. placing orders and supply chain management), managing its budget execution and payments, and managing its staff and personnel.

This particular agency is a relatively small organization, comprising of under 100 civil servants. Everyone who works there was admitted via a "*concurso público*", that is through an examination process whereby the highest ranked ones will be hired, in accordance with internal need and demand. There is a presence therefore of both employees who have been working there for over ten years, in addition to ones who have been there for less than one. It is usually up to the more experienced workers to teach the new hires.

As can be observed in Table 5.7, though the distribution between men and women is close to 50/50, as we look up the hierarchical chain of command, it is possible to observe that the number of women occupying these spaces is gradually reduced. At a supervisory role, for example, only 22% of these are women. At a management role and at a director role, none are women. This is reflective of the general trend in federal administration where, though women comprise 46% of the total workforce, only 22% occupy top management roles, versus 45% at the bottom of the chain (Valente and Pereira 2015).

Table 5.7 – Number of Civil Servants at Agency X by Hierarchical Level and Gender

	MALE	FEMALE
DIRECTOR	3%	0%
MANAGER	10%	0%
SUPERVISOR	23%	6%
EMPLOYEE	64%	94%
TOTAL	100%	100%

Approximately 50% of those employed in this organization work within the procurement process of this organization, a fact which reflects the mission of this office (i.e. procurement). Another 20% work in the Financial Department which, as will be detailed in Chapter 6, also

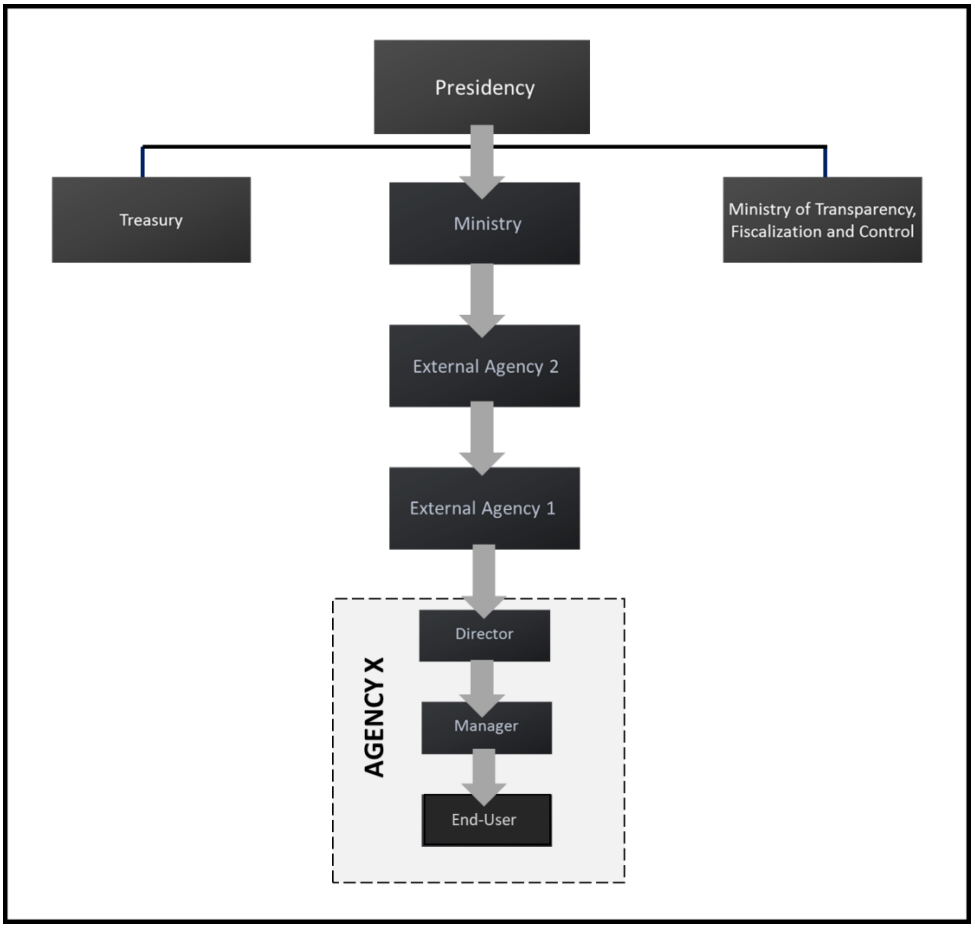
supports the procurement process. The remaining employees work in supporting roles, such as HR and technical support. Moreover, as was inferred from the interviews conducted and from the agency's organizational culture, hierarchy is strictly observed and, as a result, employees will usually refer to their direct supervisors, rarely reaching out to managers and the director. This is exemplied in the quote below, obtained as a result of the interviews conducted.

> *Int21: I can argue, show my point of view, why it's better. But ultimately it's their decision. It's their name on the line. Our agency is our director. That has to be respected. When I do something... I'm the one who's doing it, ok. But in the end, it's my manager who has to approve it. The name isn't mine, who is really dictating rules? It's the director, it's the manager, not the buyer.*

Contact with outside organizations comes in the form of purchase requests made from other agencies within this particular Ministry, in addition to several suppliers who attend to purchase requests (more details regarding the procurement process will be given in subsequent sections). They also occasionally must deal with consultants who sometimes act as intermediaries between suppliers and Agency X.

Employees at the lower level of the chain, when dealing with other government agencies, will typically only deal with employees who are in the same hierarchical level as them. Strategic decisions, such as the implementation of new systems or procedures, ordered by higher-level organizations (see Figure 5.13), will only be communicated at the director level, on whom the responsibility of communicating and strategizing with the rest of the agency will fall. As mentioned, however, the observation of hierarchical positions is a strong cultural feature within this agency. As such, the director will only liaise with his management team, who will then have the obligation of communicating decisions down the chain of command.

Figure 5.13 – The Chain of Communication from Ministry to End-User



This strong hierarchical structure also reflects how new hires are trained. They will usually be trained by others who are positioned at the same level as the position they were hired to occupy. Procedures and norms will be relayed to new hires by people in similar positions as theirs. There is, however, no formal training or a formal "onboarding" week, typical of so many private organizations. There is also no formal training on ethics. Formal documents detailing norms, procedures, rules, and legislation, do exist and can be found on the intranet, but only to be consulted as needed. In interviews, most employees, however, stated that they rarely consulted these guides, and typically relied on the expertise of others when in doubt. It is interesting to note

that guides specific to ethics and code of conduct were not found on the intranet. They are available however for consultation to anyone – employees and citizens – on the Ministry's external website.

Thus, it was possible to observe a work system that was strongly hierarchical whilst, at the same time, very informal in terms of how procedures are communicated. As reported in interviews:

> *Int11: There was no training. Everything off the record.*

> *INTERVIEWER: When you first started, what sort of training did you undergo?*
>
> *Int15: They gave me a few guides to read through, and then I sat with [CO-WORKER] and that's really where I learned everything. She's the one who taught me the procedures, the systems. She's been there for 20 years, so she knows everything.*

The lack of training was also reported regarding technical systems, which were implemented in support of the legislative changes that had taken place expanding transparency requirements (as reviewed in previous sections). This will be discussed in the following section of this chapter.

5.5.1 Organizational Change: The Implementation of Technical Systems

Agency X makes use of two main systems to document procurement processes: SIAFI and an internal system (IntSys). This section therefore serves to give an overview of these systems and how they came to be deployed at Agency X.

The IntSys which Agency X currently uses has been in place since 2011. This system is not exclusive to the agency in question, but was in fact deployed to various agencies across the

specific Ministry in which they are inserted. Prior to that, since its creation, the agency had had several different systems.

The first computerized system that Agency X deployed was in the early 1990s, when they decided to modernize its procedures. It would only be a few years later when this, then considered a more modern system, would be linked to the Internet. At the time, this first information system was developed in-house, by staff hired directly by the agency to work on it.

In 2008, this system would suffer some major changes with the intent of updating it. As with the previous system, it was internally developed and was exclusive to the agency in question. This new updated system would however be quickly replaced, due to legislation enacted not long afterwards.

As previously reviewed, in 2009, the Brazilian Congress approved Complementary Law No. 131, dubbed the "Transparency Law", which determined, among other things, the release of financial information on a real-time basis, to be published via several types of media, among which the Transparency Portal. The timeline, established by this legislation for federal entities to adjust to the new requirements, was of one year. In addition, as a means of supporting these new changes, the National Treasury released a decree which delineated accounting and financial reporting guidelines (Decree No. 548). Furthermore, pushing for further transparency, Law No. 12.527 was enacted in 2011 (dubbed the "Access to Information" law), which further expanded the amount of information to be published.

As a result, the newly-implemented system became outdated, due to not being able to attend to the new requirements. Furthermore, there was a need for the various entities within this Ministry to became more tightly integrated and for all systems to communicate with SIAFI (as

previously reviewed, it is the information on SIAFI which feeds into the Transparency Portal). As such, in 2011, a new system was deployed. This one, unlike the previous ones, was not developed in-house. Instead, it had been commissioned at a Ministerial level and then later deployed throughout various agencies across this organization, amongst which was Agency X.

The general consensus, from those working there, seemed to reflect a certain level of dissatisfaction with the system. Terms such as "inefficient" were used several times by several of those interviewed. One of the most common complaints referred to the fact that the technical support was no longer local and, therefore, any issues that arose, took much longer to be resolved. As reported:

> *Int19: With the new system, we lost autonomy. We weren't a part of the decision-making. And the organizations are culturally different. The new system doesn't capture that.*

> *Int7: The guys who developed [the internal system]… they don't know what they're doing. It's just a bunch of interns.*

> *Int17v2: The support for [internal system] is off-site. And it can take a very long time for them to fix anything. We can request it, but if they don't understand it, they'll just ignore it. Sometimes they do [update the system]. But everytime they do, you'll even get excited about it. We go "woo hoo, it's working". It feels like a celebration. But then you click on it and there's a new issue. And it's like, celebration is over. And everyone feels that way. We often talk about how they fix problems to create new ones.*

Surprisingly, it was also claimed that this new system, though created to support transparency initiatives undertaken by the federal government, was in fact less transparent than the previous one. The argument in this sense was that the new system did not support as many data

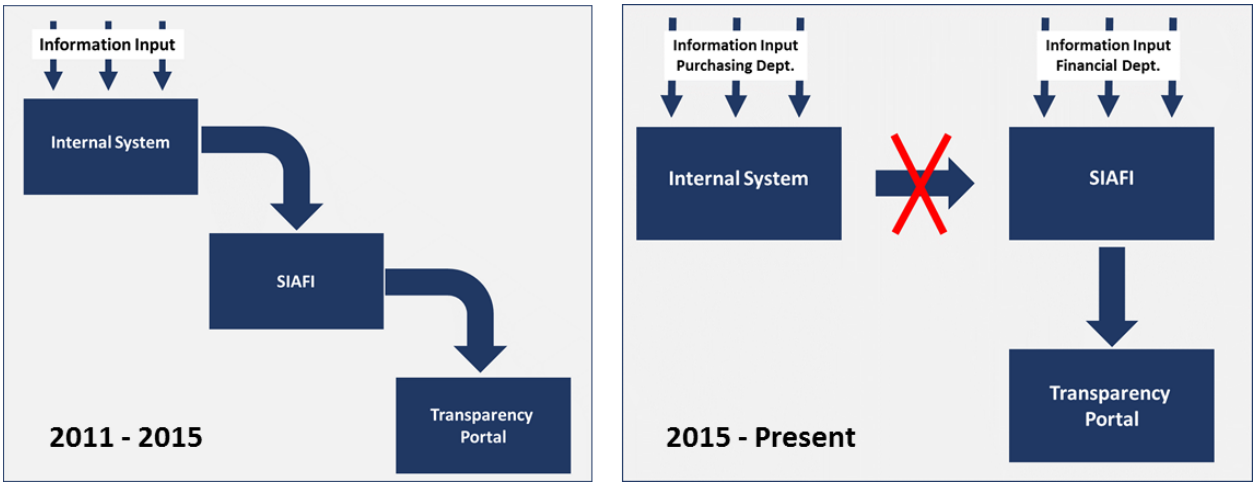
entries as the previous ones. Thus, as a result, there was less information being formally registered and inputted into the system.

> *Int3: It was more transparent before because in the other system we had to insert details of everything, we had to write in lots of details on the purchase order. The new system doesn't allow that.*

The other main system used to support the procurement process is SIAFI. As previously discussed, this was created by the Treasury, who then gradually pushed for all agencies across the entire federal government to deploy it. Initially, the agency's internal system was linked to SIAFI, meaning that information would be inputted to the agency's system first, then fed into SIAFI, and in turn reflected on the Transparency Portal.

This all changed in January 2015 when SIAFI was deployed at Agency X. At that point, information from the financial department was inputted directly into it, and immediately reflected on the Transparency Portal. As such, the link between the internal system and SIAFI ceased to exist (see Figure 5.14). In terms of transparency, this formalized the fact that only certain instances of information are reflected on the Portal, but not the entire process.

Figure 5.14 – Systems Overview: How Information is Processed



An important aspect to be highlighted regarding the deployment of both systems was how it was communicated to the staff at Agency X. Though the new systems reflected the federal government's efforts to increase transparency, this was not at any point discussed with those affected by these changes. On the contrary, not only was the new government strategy not communicated to those who are actively responsible for generating information which will feed into the Transparency Portal, but no formal training was given to employees as to how to manage the new system. Instead, employees were informed of the new systems through brief meetings and a short workshop but were mostly left to figure it out for themselves.

> *Int4: We didn't have any training… You know, they came and set it up and then gave us a brief introduction, like three days, but there wasn't any training.*

> *Int1v2: Until today, we don't really understand it properly, we didn't have any training. If I don't understand, then I call some guy (in Portuguese: "fulano"), and then he'll pass me what he knows. And then something else happens, and I call some other "fulano". And*

then somebody who knows a little less than I do comes along, so I'll help him. And that's how we pass around what we know.

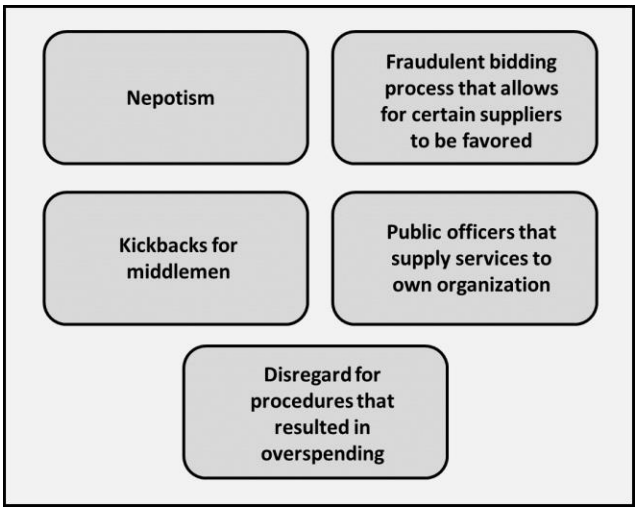
In the case of the SIAFI deployment, only staff within the financial department were involved. According to those interviewed, changes were communicated via a meeting. It was also at this point that they received guidelines for how to use it. The staff at this meeting did receive the information that SIAFI fed into the Transparency Portal. Those interviewed reported that, at the time, they believed that the information they produced would be reflecting on the Transparency Portal for the first time. This was not the case. Information produced at this agency had been feeding into the portal on a daily basis since at least 2010, albeit not directly (as previously discussed).

Due to the brevity of how it was communicated, however, transparency was yet again not treated as a priority and once again the change of systems was perceived as a procedural change. Furthermore, since the SIAFI meeting was only open to those in the financial department, the remainder of staff never even became aware of the links between it and the transparency portal. As a result, a large portion of the staff at Agency X are not aware of the existence of the Transparency Portal (25%) and 66% of the staff had never accessed the Portal.

This level of informality seems to have allowed certain corrupt practices to flourish (in addition to other mechanisms in place, as will be discussed in the analysis of the data collected, Chapter 6). Some of the corrupt practices in place here are nepotism, fraudulent bidding processes, kickbacks for "middlemen" acting as consultants and intermediating contact between Agency X and suppliers, contracting of services provided by civil servants who work at Agency X (a practice

prohibited by law so as to avoid a conflict of interest), and skipping stages in the procurement process as established by law and formal procedure, leading to negative financial planning and overspending (see Figure 5.15).

Figure 5.15 – Incidences of Corruption at Agency X



The procurement process, from start to finish, is what constitutes the information system which is the unit of analysis of this case study and constitutes the "creation" step in the transparency system. Each step in the procurement process is recorded into the IntSys or SIAFI (or both) and will result in the information that is displayed in the Transparency Portal as an entry for budget execution. The next section will therefore present a brief overview of this process.

5.5.2. Procurement Process Overview

The procurement process is comprised of several stages, rules for which have been established based on the Constitution, current legislation enacted by the Brazilian Congress, rules set forth by the Ministry of Planning, Budget and Management, and procedures established by the Ministry under which Agency X is inserted (in accordance with active legislation).

The Brazilian Constitution states in its Article 37, sub-paragraph XXI, that:

> *"with the exception of the cases specified in law, public works, services, purchases and disposals shall be contracted by public bidding proceedings that ensure equal conditions to all bidders, with clauses that establish payment obligations, maintaining the effective conditions of the bid, as the law provides, which shall only allow the requirements of technical and economic qualifications indispensable to guarantee the fulfilling of the obligations".*

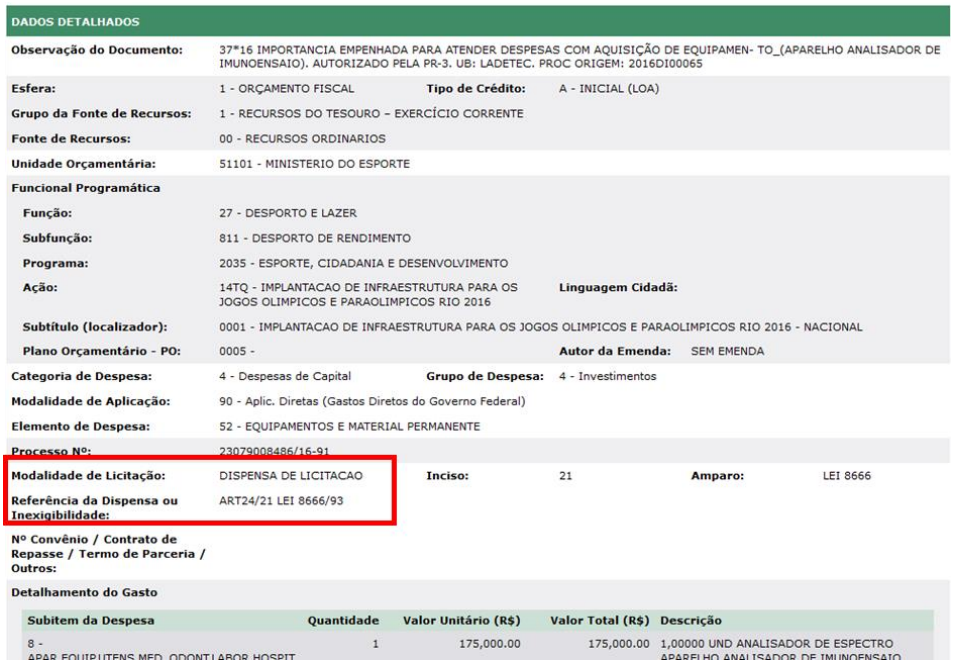
The law which regulates the bidding process is Law No. 8.666, enacted in 1993, which would be later complemented in 2010 by Law No. 12.232. In its Article 2, Law No. 8.666 establishes that all purchases, services, rental and leasing agreements, etc. must go through a bidding process. In other words, all procurement instances are subject to licitation. This same piece of legislation does state, however, exceptions in its Articles 24 and 25 (see Appendix VI for specific legislation). Some of the instances which are considered exceptions include the purchase of perishables, goods which are only available to be procured by a specific supplier, or in case of war or state of emergency.

As can be observed in Figure 5.16, when purchases fall under these exception categories, this information must be formally registered and will reflect on the Transparency Portal. What was observed from analyzing various instances of expenses on the Portal, however, is that, unlike the example given below, the reason for why a bidding process was bypassed is not always given.

Some of the labels used to justify the absence of this procedure were “inapplicable” and “ineligible”. These vague labels unfortunately do allow for abuse. As was observed (and will be discussed in more detail in Chapter 6), the reasons for not complying with the bidding process extend beyond the formal application of the law and enter into realms of illegality. Moreover, the formal technical systems can also aid in this process, allowing for erroneous pieces of information to be entered into it.

Other forms of circumventing the integrity of the licitation process, as observed by investigations into the “Car-Wash” corruption scandal, involve entering into a kickback agreement whereby suppliers enter into an agreement with public officers prior to the bidding process to ensure they are awarded that specific contract. In summary, though mandated by law and subject to scrutiny via the Transparency Portal, the bidding process is liable of corruption.

Figure 5.16 – Screenshot of Entry on Transparency Portal Depicting Licitation Exception
Source: Transparency Portal



DADOS DETALHADOS

Observação do Documento:	37*16 IMPORTANCIA EMPENHADA PARA ATENDER DESPESAS COM AQUISIÇÃO DE EQUIPAMEN- TO_(APARELHO ANALISADOR DE IMUNOENSAIO). AUTORIZADO PELA PR-3. UB: LADETEC. PROC ORIGEM: 2016DI00065				
Esfera:	1 - ORÇAMENTO FISCAL	**Tipo de Crédito:**	A - INICIAL (LOA)		
Grupo da Fonte de Recursos:	1 - RECURSOS DO TESOURO – EXERCÍCIO CORRENTE				
Fonte de Recursos:	00 - RECURSOS ORDINARIOS				
Unidade Orçamentária:	51101 - MINISTERIO DO ESPORTE				
Funcional Programática					
Função:	27 - DESPORTO E LAZER				
Subfunção:	811 - DESPORTO DE RENDIMENTO				
Programa:	2035 - ESPORTE, CIDADANIA E DESENVOLVIMENTO				
Ação:	14TQ - IMPLANTACAO DE INFRAESTRUTURA PARA OS JOGOS OLIMPICOS E PARAOLIMPICOS RIO 2016	**Linguagem Cidadã:**			
Subtítulo (localizador):	0001 - IMPLANTACAO DE INFRAESTRUTURA PARA OS JOGOS OLIMPICOS E PARAOLIMPICOS RIO 2016 - NACIONAL				
Plano Orçamentário - PO:	0005 -	**Autor da Emenda:**	SEM EMENDA		
Categoria de Despesa:	4 - Despesas de Capital	**Grupo de Despesa:**	4 - Investimentos		
Modalidade de Aplicação:	90 - Aplic. Diretas (Gastos Diretos do Governo Federal)				
Elemento de Despesa:	52 - EQUIPAMENTOS E MATERIAL PERMANENTE				
Processo Nº:	23079008486/16-91				
Modalidade de Licitação:	DISPENSA DE LICITACAO	**Inciso:**	21	**Amparo:**	LEI 8666
Referência da Dispensa ou Inexigibilidade:	ART24/21 LEI 8666/93				
Nº Convênio / Contrato de Repasse / Termo de Parceria / Outros:					

Detalhamento do Gasto

Subitem da Despesa	Quantidade	Valor Unitário (R$)	Valor Total (R$)	Descrição
8 - APAR.EQUIP.UTENS.MED.ODONT.LABOR.HOSPIT.	1	175,000.00	175,000.00	1,00000 UND ANALISADOR DE ESPECTRO APARELHO ANALISADOR DE IMUNOENSAIO

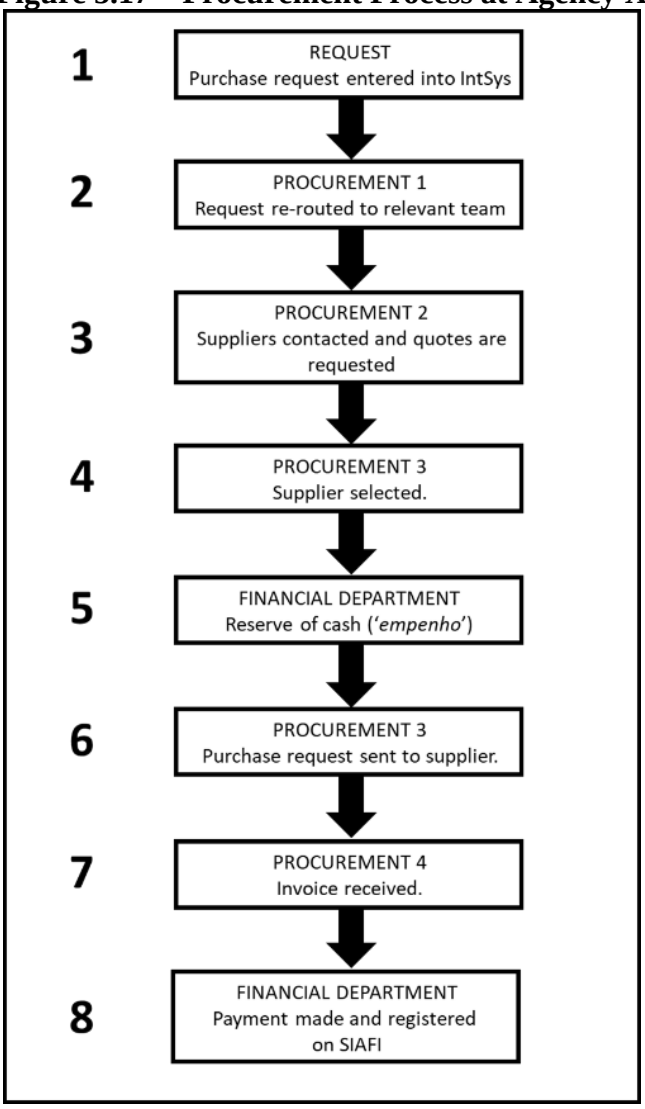
Every single piece of legislation to which any civil servant, who manages purchases in the public federal sphere, is subject to, is currently listed in a government portal entitled "Government Purchases[21]", managed by the Ministry of Planning, Budget and Management. These are available for consultation by anyone, citizens and civil servants alike. However, in the case of Agency X, these are not listed on their intranet; neither the relevant pieces of legislation nor the link to the Ministry of Planning's portal are present. Moreover, none of those interviewed were aware of their existence, contributing to a loose application of the legislation on practices.

The procurement process, as observed by Agency X, involves two different departments: the Purchasing Department and the Financial Department. The purchasing department is broken down into five sub-units, four of which, at varying stages, will directly deal with the procurement process. In other words, when a purchase is requested, the process it ensues will be touched upon by many different people at different stages of the process.

The entire procurement process, depicted in Figure 5.17, comprises of eight stages: purchase request, re-routing to person responsible for relevant product category, licitation, supplier selection, supplier communication, reserve of cash, liquidation, and payment. This constitutes the basis for the information system under analysis and will therefore be reviewed in greater detail in Chapter 6, by means of a DCog theoretical framework.

[21] www.comprasgovernamentais.gov.br

Figure 5.17 – Procurement Process at Agency X



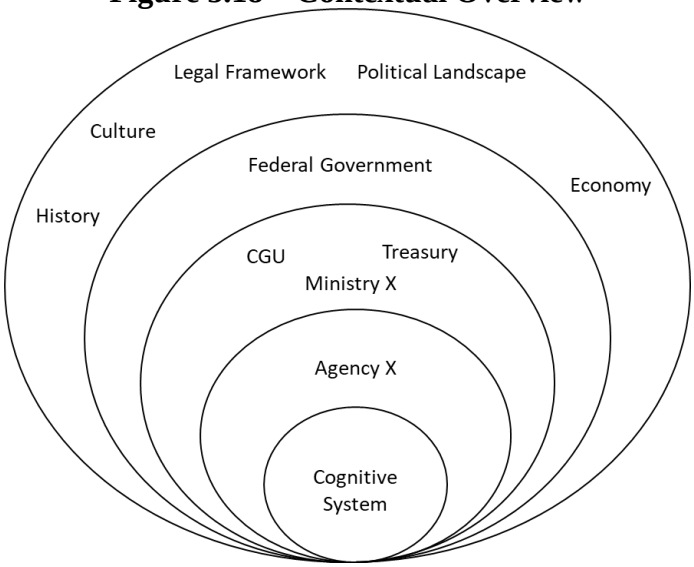
5.6. Conclusion

Though this is mostly a descriptive chapter, it demonstrates all the external forces which either directly or indirectly impact the unit of analysis in question, i.e. the cognitive system at Agency X. Failing to understand this complex structure would undoubtedly result in a lack of understanding of the forces shaping and constraining this system. Moreover, it is in line with the DCog approach. As Hollan et al. (2000: 178) affirm, "cognition is no longer isolated from culture

or separate from it. Where cognitive science traditionally views culture as a body of content on which cognitive processes of individual persons operate, in the distributed cognitive perspective, culture shapes the cognitive processes of systems that trancend the boundaries of the individuals". As demonstraded in Figure 5.18, many are the forces which constrain and impact this system: legal and political landscapes, culture, history, the economy, and organizational structures and dynamics. It is the legal and political landscape which determine the rules under which transparency will be created; it is the culture which determines how that information is divulged; and it is the organizational structures and dynamics that will shape how the information is propagated through the system and how it will be presented in its stage of publication.

This chapter aimed at outlining in some detail several of these forces, demonstrating the very complex web of factors exerting a certain degree of influence on the information system that produces transparency. The next chapter will analyze this system in greater detail utilizing DCog as the theoretical framework.

Figure 5.18 – Contextual Overview



CHAPTER 6
CASE STUDY: ANALYSIS

6.1 Introduction

The previous Chapter described in some detail the context in which the unit of analysis in this research – the cognitive system at Agency X – is embedded. Government institutions are complex organizations, subject to the external influence of many different mechanisms, as reviewed in Chapter 5. Hence why, Agency X, the *locus* where transparency is produced, could not be considered in isolation. Rather, as per Walsham (2009) and Stake (2010), a thorough understanding of the contextual environment was required, a requirement supported by Hutchins (1995) who idealized the theoretical approach utilized here, distributed cognition (DCog).

As discussed in Chapter 3, transparency is not an isolated concept, but is in fact a socio-technical system. Moreover, it can be conceptualized as an information system that is cognitively distributed between human and technical agents and divided in three phases: creation, publication, and access (refer to Chapter 2 for full discussion). Whilst previous research has heavily emphasized the "technical" component of transparency, whilst overlooking the "social" aspect of it, in addition to focusing on the publication and access phases of it, this thesis instead opts to focus on the "creation" phase. In addition, it contends that both aspects, the technical and the social, work in tandem re-inforcing and shaping each other in a cognitively distributed way. In this regard, Rogers and Ellis (1994: 122) explain that "cognitive activities [are] embodied and situated within the work settings in which they occur. By explicitly adopting this broad focus, the distributed

cognition approach provides a theoretical and methodological framework for analyzing complex, socially distributed work activities of which a diversity of technological artifacts and other tools are an indispensable part".

As explained in Chapter 3, in order to apply DCog to the data gathered, a DiCoT (distributed cognition for teamwork) methodology was adopted. Developed by Furniss and Blandford (2006), DiCoT allows the researcher to analyze data through a DCog lens in a structured way. Data is iteratively coded for DCog principles which are used to create diagrammatical and narrative representations of the five models proposed by Furniss and Blandford (2006): physical layout, artefacts, information flows, social structures, and evolution of systems (see Appendix II for full description of the principles associated with each model). As a result of constructing such models, the DiCoT framework aids the researcher in identifying how cognitive processes are distributed amongst the agents (technical and human) of this system, in addition to determining issues, errors, and breakdowns in the information flow and the reasons why.

In summary, DCog is the theoretical framework, whilst DiCoT is the methodological approach. As a result of this line of discussion, two research questions were proposed:

R1: How are cognitive processes distributed between agents (human and artefact) at Agency X?

R2: How do breakdowns impact the cognition system at Agency X?

A second line of inquiry regarded the issue of ongoing practices of wrongdoing and unethical decision-making at Agency X. These practices, as already established, have persisted even in the face of transparency deployment. As discussed in Chapter 2, the dominant line of thinking in the field proposes that transparency should in fact result in lower levels of corruption.

That, however, has not been the case in Brazil, and indeed at Agency X. As theorized in Chapter 3, this may be due to the presence of collective moral disengagement. Proposed by Bandura (1986, 1999, 2016), and rooted in social cognitive theory, moral disengagement is used to understand why people engage in deviant behavior.

Prior research has indicated a causal relationship between morally disengaged thinking and unethical behavior (Detert et al. 2008; Moore et al. 2012). Moreover, as Herath et al. (2017: 1143) explain, moral disengagement mechanisms allow for individuals to be "freed from the self-sanctions and the accompanying guilt that ensues when behavior violates moral standards, and the individuals are thus more likely to engage in deviant behavior". Bandura (1986) establishes that there are eight moral disengagement techniques that may be used by individuals: moral justification, advantageous comparison, euphemistic labeling, displacement of responsibility, diffusion of responsibility, minimizing or distorting harmful effects, dehumanization, and attribution of blame.

Based on the findings presented in Chapter 5, in which moral disengagement was identified in individuals who had committed acts of corruption at Petrobrás, it is plausible to assume that this dynamic would be present at Agency X as well. Thus, based on this discussion, a third research question was proposed:

R3: How do moral disengagement mechanisms facilitate the breakdown of cognition systems?

In order to answer that question, two techniques were employed: first, the Moral Disengagement Measure by Moore et al. (2012) was applied to participants interviewed in order

to confirm the presence of moral disengagement mechanisms at Agency X. Then, secondly, the data gathered was coded for moral disengagement mechanisms, in accordance with Bandura's (2006) *Manual for Coding Modes of Moral Disengagement*.

This Chapter is structured in the following manner: in section 6.2, the procurement process is broken down and analytically decomposed (what Hutchins (1995) refers to as an "activity score") in order to gain an understanding of it. Section 6.3 will then present the analysis of data by utilizing the DiCoT framework. Section 6.4 presents the analysis of data through the lens of the moral disengagement theory and, finally, section 6.5 presents some concluding remarks.

6.2 Distributed Cognition: Decomposition of the Procurement Process

Prior to delving into the details of the cognitive system under study and the various different parts that operate in relation to each other, it is necessary to first of all analytically decompose the process. This is what Hutchins referred to as an "activity score" (refer to Chapter 4 for discussion on it).

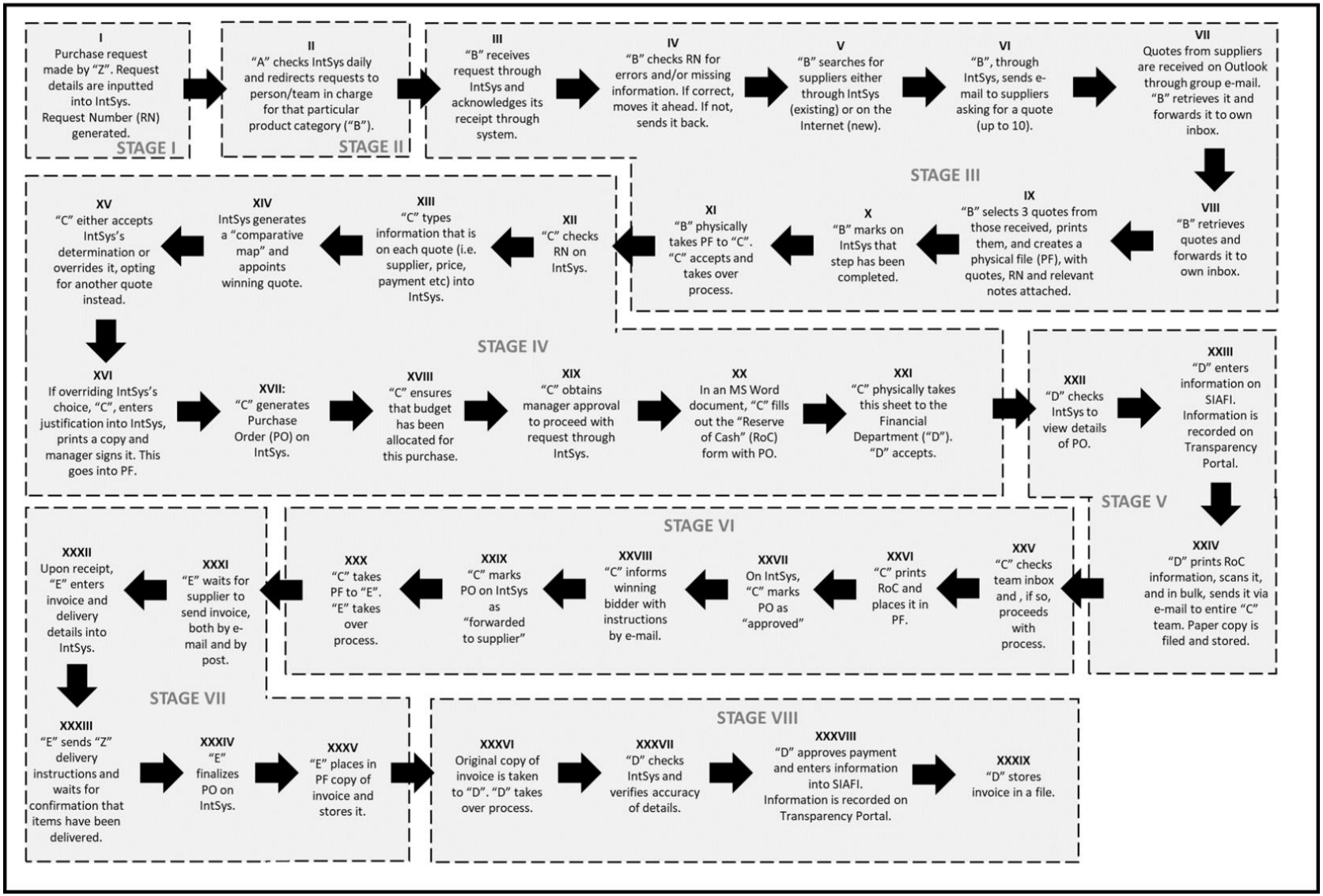
A high-level overview of the sequence of tasks was initially presented in Chapter 4 (see Figure 4.1). Here, this broad overview is is described in more detail (refer to Figure 6.1 for a visual map of the process and Appendix VII for a full step-by-step). In summary, the procurement process can be broken down into eight different stages, and will be touched upon by six different groups of people, distributed amongst two departments: the purchasing and the financial departments. As can be viewed in Figure 6.1, the process is kick-started when a requester ("Z") has an identified a need and places a request through the internal system (IntSys; Stage 1). This requester will be located at either Agency X, or one of the agencies interlinked through the IntSys within Ministry

X. Stage II will then consist of team member “A” fielding this request and redirecting it to “B”, a team member who will be responsible for that specific product category.

Team member “B” will then select suppliers whom to contact and request quotes from (Stage III). Up to ten suppliers may be contacted, and the process will be moved along to team member “C” once at least three quotes have been received (the bidding process – part 1). Stage IV then consists of “C” choosing the winning bid (bidding process – part 2) and handing this process to the financial department (“D”) so that they may ensure that budget has been allocated and reserve that amount for that particular purchase (“Reserve of Cash”, Stage V). Team member “D” will then hand the process back to “C” so that they may inform the supplier who has provided the winning bid and obtain their acknowledgement (Stage VI). Once that has been received, the process will then move along to team member “E” who will ensure that suppliers are delivered and will process the invoice (Stage VII) so that the financial department can once again take over the process in order to remit payment (Stage VIII).

The process will be handled via several artefacts. Though most of it will be recorded on the IntSys, some of it will be handled via e-mail and telephone. In addition, a physical file (PF) is created for each process containing copies of documents and exchanges. This PF will move along across teams as the procurement process progresses. Finally, SIAFI will be used by the financial department to record the Reserve of Cash (RoC) and payment instances and relevant information pertaining to it. As will be discussed in further detail throughout this Chapter, it is SIAFI that communicates with the Transparency Portal.

Figure 6.1 – Decomposition of the Procurement Process



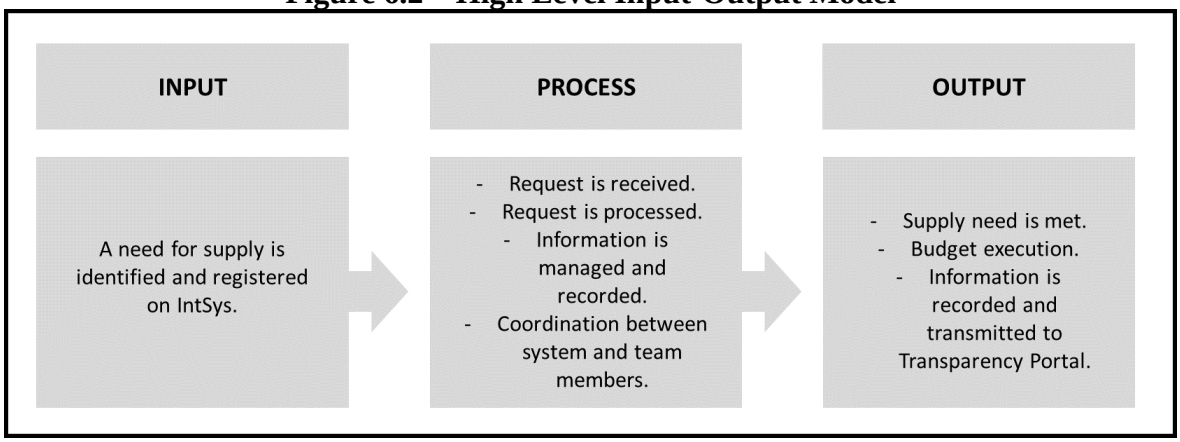
Having given an overview of the tasks that compose the procurement process and, subsequently, the cognitive system that is under analysis, the next step is to analyze this process through the lenses of the theoretical framework, distributed cognition (DCog). As discussed, in order to do so, the distributed cognition for teamwork (DiCoT) methodological framework developed by Furniss and Blandford (2006) will be utilized. This is the focus of the next section of this Chapter.

6.3 DiCoT (Distributed Cognition for Teamwork) Analysis

According to Furniss and Blandford (2006), in order to analyze data utilizing DiCoT, five models must be constructed: information flow, artifacts, physical, social, and evolutionary. Berndt et al. (2014: 433) affirm that "each model is associated with a set of DCog concepts and principles, which serve as a checklist for analyzing the model in terms of DCog theory". Thus, by following this checklist, the researcher is able to identify points of vulnerability and/or error imbued within the system. Keeping in mind that the unit of analysis for this thesis is the cognitive system, this section of the Chapter is dedicated towards addressing each of the principles and providing rich accounts of information.

Before continuing with the analysis, a high level input-output model is presented below (Figure 6.2). According to Rajkomar and Blandford (2012: 583), such a model "simply summarizes the overall function of the system in terms of input, system factors influencing processing, and output". Further insight into how this process takes place, in terms of the agents, technical and human, communication, and resources, will be discussed and analyzed under the prism of the various DiCoT models in subsequent sections of this Chapter.

Figure 6.2 – High Level Input-Output Model



6.3.1 Physical Layout Model

Furniss and Blandford (2006) affirm that the physical layout model refers to the physical organization of the work setting and the physical principles that will influence the performance of the system. Blandford and Furniss (2005: 4) add that "the physical model describes those factors that influence the performance of the system, and of components of the system, at a physical level. This description is important from a distributed cognition perspective as those things that can be physically heard, seen and accessed by individuals have a direct impact on their cognitive space and hence will shape, empower and limit the calculations that individuals perform". As such, focusing on the physical layout of Agency X aids in obtaining a view of their working space and how that will support information production.

Seven principles were identified by Furniss and Blandford (2006) from the DCog theory as relating to the physical model (see Appendix II for more detailed list): space and cognition, perceptual, naturalness, subtle bodily supports, situation awareness, horizon of observation, and arrangement of equipment. Of these, three – perceptual, naturalness, and subtle bodily supports – did not emerge as part of the findings in the data analysis. The other four will be discussed below.

6.3.1.1 Space and Cognition

As part of the procurement process, teams will handle a large load of paperwork. As will be discussed in more detail in the artefact model section, paper-based information takes a central role in communicating and triggering stages in the procurement process. Worktop space therefore is partly taken up by this extensive amount of paper load, which is distributed in physical file folders. The display of these folders within clear vision serves as a reminder of the processes that still need to be dealt with and are still pending.

6.3.1.2 Situation Awareness and Horizon of Observation

This is an open-office environment. There are no divisions. Desks are in close proximity, often with no space between them, much like the depiction in Figure 6.3 (a reproduction of the architectural layout, not an actual picture of Agency X or exact reproduction, due to anonymity which must be maintained). Members of the same team will be placed close to one another. The only physical barrier between one team and another is a wider gap between desks. Same team members' desks will be closer to one another. This facilitates communication between team members which is not always related to work matters. Thus, the layout of the office space contributes to both how work matters are communicated and to the informality of the environment:

> *Int9: We often joke around, play with one another.*
> *INTERVIEWER: Would you say you talk mostly about work-related things or personal things?*
> *Int9: We mostly talk about things that are not work. It breaks the routine. Makes work more fun.*
> *INTERVIEWER: And do people get along well?*
> *Int9: For the most part, yes.*

Figure 6.3 – Representation of the Physical Layout at Agency X

This characteristic allows for any discussions that need to be had regarding the procurement process to be communicated directly, in a face-to-face manner. No formal register of these conversations will therefore be made. This feature contributes to the informal environment of the work place. It promotes an "informal" channel of communication, even across teams. Participants will stand up and walk over to whom they want to communicate with, as opposed to calling or e-mailing. This not only transpired in what was reported in interviews, but also by what was observed:

> *Sitting next to [Participant G] and [Participant R] interrupts us and asks about a process. Claims that [Requester Z] has called asking about it. Asks for a status. [Participant G] responds that he will get back to [Requester Z]. [Participant R] makes a joke, apologizes for interrupting us. Walks away. (Notes from February 2016)*

Just as the depiction in Figure 6.3, there are a few closed offices. These belong to the members of upper management (please refer to Figure 5.14 in Chapter 5; every team will have a manager). Generally, the door to these offices remains open and is only closed when there is a

meeting. However, as observed and reported through interviews, walls to these offices are thin and conversations held in there can be overheard outside, therefore adding no layer of privacy. Office space is thus mostly to demonstrate the hierarchic distance between those out "on the floor" and management. Moreover, the open door policy allows managers to remain aware of all activities that are taking place outside (*horizon of observation*).

The level of awareness of everything that takes place by all individuals is high due to this setup. An example that reflects this is a situation that was observed once when there: a certain employee received a call from a requester who was upset at the delay in dealing with his request. She felt that he was rude to her over the phone and broke down in tears. As a result, everyone else rallied around her to support her, including her manager who witnessed the commotion from his office. This incident exemplifies the high level of awareness everyone in that environment has.

Teams involved in the procurement process are located within the same office space. The exception to this is the financial department team which is located on a different floor, away from the procurement teams (refer to Figure 6.1 and Appendix VII for an overview of the tasks and division of teams). Thus, the financial team is contained in a separate environment and only becomes aware of processes when directly communicated. Separation of the financial team means they are not directly involved in conversations pertaining to the procurement process. Their awareness will either come from what is communicated and stored on systems or the information contained on documents that are relayed to them (or both). They will not however be privy to the informal exchanges of communication that take place regarding processes due to this physical impediment. Hence, their horizon of observation is low. Moreover, any additional information that needs to be relayed regarding processes, such as special requests or the need to circumvent rules, will be done at a managerial level.

Important to note that the level of informality in the exchanges cannot only be attributed to the physical layout of this work environment. Brazilians are culturally known for being sociable and loud in their exchanges, and that feature transpires to all settings, including work environments. Thus, this would partly explain the high level of informality at Agency X and cannot be disregarded. However, the physical layout certainly encourages the constant exchanges as opposed to curbing it, making it a feature that cannot be dismissed.

6.3.1.3 Arrangement of Equipment

Apart from the desks, office equipment includes file cabinets and printer/fax hubs. File cabinets are all located against walls or in the storage area of the building. They therefore do not create barriers between people. Printer/fax hubs on the other hand are located in the center of the office floor, within easy access of everyone, adding to the dynamism of the office space, with people often moving around.

6.3.2 Artefact Model

Furniss and Blandford (2010: 2) state that "the artefact model concerns itself with the artefacts, representations, and tools that are used to store, transform and communicate information". In the case of Agency X the main artefacts used which make up the DCog and aid in the process of information creation are technical artefacts and paper-based ones (see Table 6.1 for an overview). Furniss and Blandford (2006) identify four principles that relate to the artefact model: mediating artefacts, creating scaffolding, representation-goal parity, and coordination of resources. These will be reviewed in this section of the Chapter.

Table 6.1 – Summary of Artefacts

Artefacts		Description
Technical Artefacts	Internal System (IntSys)	IntSys constitutes the main technical system used by those involved in the procurement process. It registers several instances of information that are pertinent to this process. At each completion stage of the procurement process, this is recorded on IntSys. This serves two purposes: ensuring the process is moving forward and recording who owns the process at each particular stage.
	SIAFI	SIAFI is the main interface between the procurement process and the Transparency Portal. It serves the purpose of centralizing all budgetary execution information for the entire federal government. It is managed solely by the financial department.
	MS Word	Used to record supporting documentation, such as the 'Reserve of Cash' form.
	E-mail	Used to communicate with suppliers and, occasionally, with "Z" (purchase requester).
	Telephone	Used to communicate with suppliers and "Z" (purchase requester).
	Printer	Used to print documentation that needs to be inserted into paper files.
Paper-Based Artefacts	Paper files	Paper files should reflect the process that is recorded on the system. Also serves the purpose of triggering the next stage in the procurement process, once it is delivered to the next person in line.
	Paper notes	Used to set reminders or any relevant notes that should be added to paper file.
	Invoice	Invoice is required in order to finalize the procurement process on IntSys. It will then be used by the financial department to make payment and record information on SIAFI.

6.3.2.1 Mediating Artefacts

Hutchins (1995: 290) defines mediating artefacts as “structural elements that are brought into coordination in the performance of the task”. Furniss and Blandford (2006: 6) add that examples of these include “language, writing, counting, maps, signposts, computer programs, mental models and diaries”. By that definition, all of the artefacts in Table 6.1 could be considered mediating artefacts since they serve the purpose, at different stages of the process and to a greater

or lesser degree, of supporting cognitive processes. In this section, the main ones will be described in greater detail.

The main mediating artefact is the internal system (IntSys), used by Agency X to process the purchase request. The initial request placed by "Z" (refer to Figure 6.1 and Appendix VII for a summary of the activities that make up the procurement process) is inserted on the IntSys, which is the trigger for the entire process (which will be discussed in more details when discussing the information flow model, in section 6.3). The actual interface of the system cannot be displayed here in order to protect the anonymity of Agency X, so suffice to say that it has a very clean and simple interface, which was described by interviewees as "pretty" and "attractive" (Int17; Int21). It allows for all of the stages in the procurement process to be stored there. It was however referred to in several of the interviews as not "user friendly", and is criticized in many aspects:

> *INTERVIEWER: What don't you like about the system?*
> *Int27: I can't even fully explain why I don't like it. It's hard to describe. It's just s***. It's not straightforward, not user-friendly. There are so many things that could be improved.*

> *Int21: It's not efficient. It has all these different tabs when really it should just have one, with all of the information there. And it's just not very smart. Like, if you know the exact order number, then ok, it's easy to find what you're looking for. If not, it can take a very long time. Because if you type in a lower case letter instead of a capital, you'll get an error. Or sometimes, you're trying to find the supplier in the system, but it's stored a certain way. And if you only type in part of that name, then it won't find it. For example, imagine you're trying to find the name "Coca-Cola", so you type "Cola", and it won't find it. Or you only type "Coca-Cola", but it's actually been registered as "Coca-Cola of Brazil". And it can take a very long time to find it.*

> *Int4: There are manual things that we have to do here and there. And when you add all of these up, it's a lot. We work for the system, not the other way around. The system is a register, not a tool.*

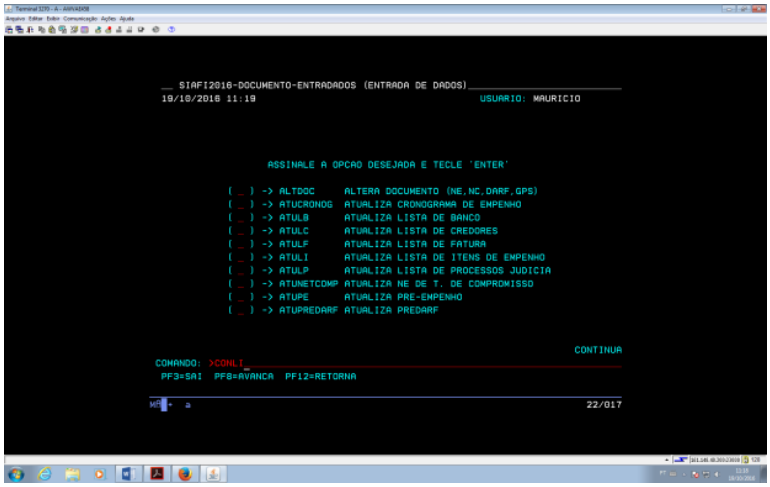
The themes that therefore emerge regarding the IntSys were: not user-friendly, inefficient, convoluted, and difficult. In DCog terminology, the degree of disparity between the goal of the user and their cognitive needs is high. This lack of parity between goal and representation will later become the source of moral disengagement (as will be discussed in section 6.4 of this Chapter) as users' frustration with the system will be used to justify circumventing rules.

The other main technical system, SIAFI, is only used at two stages of the procurement process: Reserve of Cash (Procurement Stage V in Figure 6.1) and Payment (Procurement Stage VIII). Users in the procurement process do not have access to this system since it is only used by financial department personnel. SIAFI has been described as straightforward by those who use it, in spite of its appearance which resembles a DOS-system (see Figure 6.4). This DOS-like feel extends to the navigation of the system which acts on commands. This way of navigating it was described as confusing for those who are starting out:

> *Int3: Sometimes you go to a screen but then you can't go back and the only way of doing that is by re-starting the entire program. So it can be a little confusing to get it right, and you have to try a few times.*

SIAFI is the only system which communicates with the Transparency Portal; that is, the information stored on SIAFI will reflect on the Transparency Portal. SIAFI therefore cannot be considered a mediating artefact between all of the users who partake in the procurement process, since it is not accessible to all. It can however be considered the mediating artefact between Agency X and civil society, since it is through SIAFI that the procurement processes handled by Agency X will be communicated to the outside world, by means of the Transparency Portal (the intermediary stage in the information system, which is publication, and will then lead to the final stage of public access).

Figure 6.4 – SIAFI Interface
Source: STN



Other technical artefacts that are used in this process include e-mail and telephone. These are the main forms of communication with those outside Agency X, i.e. suppliers. They are not used however as an internal means of communication due to the layout of the office space, as was discussed in more detail in the physical layout model section of this Chapter. MS Word will also be used at certain stage in the procurement process (see step XX in Figure 6.1 and in Appendix VII) to complement it. The document that is then printed will be used as a mediating artefact between procurement teams and the financial department. In this regard, paper becomes one of main forms of communication in this entire DCog system, and one of the most important mediating artefacts.

As described in Appendix VII, in step IX of the procurement process the agent will put together a folder (or physical file – PF), and this will serve the purpose of aiding communication and coordinating tasks. It also serves as a behavioral trigger since when the process is ready to move to the next stage, this PF will move to the next person and is what will prompt that person to act. As explained:

Int19: For us, it starts with the technology. The request comes via the IntSys. But the IntSys works more like a register. The process actually… we realize the process is "walking" when the folder moves. IntSys is more of a register. It doesn't lead the process. It's the folder that tells us that we have to do something about it. It's obvious, if someone wants to check processes on the IntSys, they can. But we only ever do anything about it when we receive the paper.

The folder (PF) acts like a mediating artefact, in the sense that it is the act of it being passed around that informs the next participant of a process and triggers him/her to act. Thus, its role in propagating information, aiding in communication, and coordination of tasks is significant. To a degree, it reflects the information that is stored in the system, therefore also acting as a back-up source of information, and what Hutchins (1995) would refer to as the principle of *distributed memory*, that is, an artefact that serves the purpose of redundancy. This particular principle is not on the list of principles considered by Furniss and Blandford (2006) when they originally established the DiCoT framework. Considering that they built this framework to analyze DCog within a medical setting, perhaps it is not one which needed to be highlighted. But here, in this organizational setting, based on the analysis of the data obtained as part of the interviewing process, this is a theme that emerged and is significant to the cognitive system and the coordination of cognitive processes.

Regarding the PF, it should be noted that it in fact goes beyond what is contained on the IntSys. For example, all e-mails exchanged in reference to the procurement process should be stored in this folder; the IntSys on the other hand will not have this level of detailed information since there is nowhere on the system to attach or store this kind of information. In addition, as mentioned, it is what allows the process to move forward. And, as the folder moves along, since it has to be physically taken to the next stage, it creates the opportunity for extra communication

amongst different individuals in the organization. The PF is therefore the main mediating artefact, a surprising fact when considering that transparency is usually thought of as technical-based. As described:

> *Int17: Yeah, it's the process going from hand to hand which makes it move forward. But I can see who has the process if someone asks me. I can see where it's at and the status [on IntSys]. The system helps. It can help a lot.*

In addition, to a certain extent, the paper-medium is considered more reliable than IntSys:

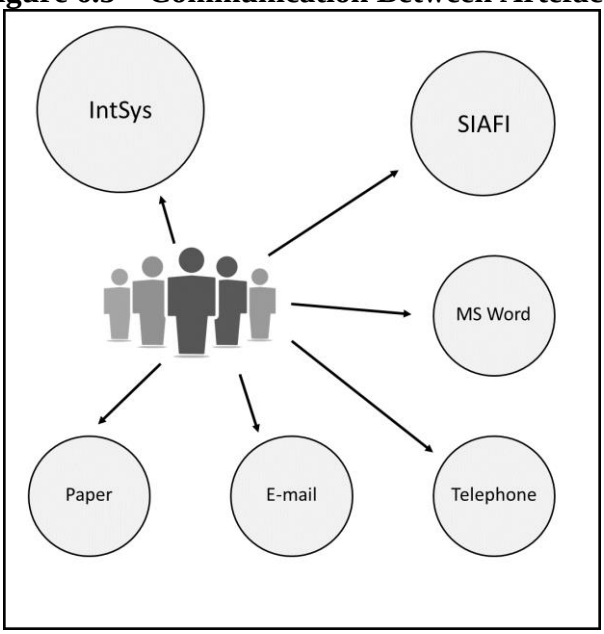
> *Int19: Before moving the process forward, we have to indicate on the system that we have. And if I forget to do that, the system won't know. It should be able to already track the progress, everytime I accomplish a step. But no. I have to keep going back in the system to do that.*

Indeed, it is the definitive mark that a process is progressing, gaining more importance in that regard than the IntSys:

> *Int21: I have already forgotten to do that. Because we have too many things to do. And it happens. We're human. And then we take the folder to the next person but in the system it shows it's still with me, not with [REDACTED]. But it's been with him for a long time. But nobody saw it. And it's a small mistake. But then the requester wants to know the status and checks the system and starts insisting 'it's with [REDACTED], but it's not with him. It already moved. But no one saw.*

One final consideration regarding the artefacts is that they do not communicate between each other (see Figure 6.5). Thus, it is the participants who act as the integration medium between them. It can be affirmed therefore that it is the human component of this DCog system that takes on the role of coordinating resources.

Figure 6.5 – Communication Between Artefacts



6.3.2.2 Creating Scaffolding

Both the IntSys and the PF provide scaffolding to support teams. Both contain within them clear information regarding the work progress and the stage of the procurement process which is currently being worked on, in addition to who has worked on a particular process, and what stages have yet to be completed.

The PF specifically serves as scaffolding internally to those who are working on the process. IntSys, on the other hand, will serve as scaffolding to anyone who is not directly working on this process, but has access to the system, such as a manager, or requester "Z". It is, as described in the dialogues provided in the previous section, a "register" of the process (provided that the information there has been inputted correctly and no stages of the process have been circumvented or skipped).

6.3.2.3 Representation Goal-Parity

Furniss and Blandford (2006: 6) explain that this principle refers to the way "in which external artifacts can aid cognition [in] providing an explicit representation of the relationship between the current state and a goal state". In that regard, the desired state for PFs is to be filed away. This is the definitive mark that the procurement process has been completed:

> *Int21: When it's done, we file the folder. There's a box. We put it there. And then when the box has filled up, it goes into storage.*

For the financial team, the goal state is to have the invoice filed (step XXXIX in Appendix VII), which formally marks the end of the procurement process if no steps have been circumvented and no rules have been broken. Furniss and Blandford (2006: 6) explain that "the closer the representation can be to the cognitive need or goal of the user the more powerful that representation will be". Hence, when steps are skipped and processes are ended without the proper artefacts to support that goal, that representation loses its power. And, as will be reviewed in subsequent sections of this Chapter, this is often the case. Thus, it is possible to affirm that parity between goal and representation is often low:

> *Int17: It's possible to carry out the process completely outside the system. There are several like that. In several I mean, there's a considerable amount of processes like that. You know… sometimes there's not enough time to go through the process. So we just go ahead and purchase. And then later, we go back and register everything when the process is done. The process will already be finished.*

6.3.2.4 Coordination of Resources

Rajkomar et al. (2015: 190) posit that "coordination of resources implies, for example, coordinating the plan with the current state to determine the next goal to be achieved". In the case of the cognitive system under analysis at Agency X, the PF and IntSys represent the key coordination resources. Both capture the planned work and the history of the procurement process, thus informing participants what yet needs to be completed. The PF in particular, as already discussed, will reflect the greatest source of history of the process since it will contain even more information than that which is on the IntSys, such as e-mail records. It thus forms an integral part towards the completion of the process (provided it follows procedures).

The IntSys on the other hand is integral to coordinating resources between the procurement team and the financial team. The financial team does not have access to the PF and will instead rely on the information therein contained on the IntSys when completing the reserve of cash (steps XXII and XXIII on Figure 6.1, Appendix VII) and payment stages (steps XXXVII and XXXVIII). The paper documents received at each of the stages (RoC form and invoice) are also representative of this, playing a meaningful role in coordinating resources. These resources – paper documents and IntSys – are also integral towards coordinating the information between the procurement process internally at Agency X and the information that is published on the Transparency Portal. This is due to the fact that it is the information contained on these artefacts that will form the basis for the information inputted on SIAFI, which is then fed into the Portal.

6.3.2.5 Additional Principles

There are two additional principles not considered by Furniss and Blandford (2006) in their artefact model for DiCoT, which should be highlighted here, since they emerged through the analysis of the data collected. The first one, alluded to in a previous section, is *distributed memory*, which refers to information that is redundantly collected and stored. In this regard, the PF serves as the back-up memory for what is stored in the IntSys. However, distributed memory is not confined to artefacts. Individuals can also act as redundant points of records and information. In the case of Agency X, where some degree of informality is high, this is certainly the case. Much of the information regarding procedures and processes is stored within individuals and communicated only between them, meaning no formal record remains. This is a point that will be further developed in the social structures model section of this Chapter.

Another principle that is not considered by Furniss and Blandford (2006) in their framework is the principle of *modularity*[22]. Hutchins (1995: 167) refers to this principle when referring the "precomputational activities" imbued within systems which "remove from local computations any aspects that are invariant across the spatial and temporal extent of the computation". In other words, systems come imbued with information and properties which can constrain and/or support activities and the distribution of cognitive processes. In the case of procurement processes studied at Agency X, technical artefacts, the IntSys and SIAFI, have imbued within them a series of processing rules and norms, which constrain and shape the

[22] In Information Systems, modularity often refers to *modules* of a complex system. As Reijers and Mendling (2011: 881) explain, "modularity is the design principle of having a complex system composed from smaller subsystems that can be managed independently yet function together as a whole". This is not to be confused with Hutchins' (1995) understanding of modularity. For him, the principle of modularity in fact refers to the innate properties of an artefact (pre-established in its design) which can shape cognitive processes.

information and data inputted into them. Regarding the IntSys specifically, participants complained about these innate properties, claiming their activities were limited by it:

> *Int21: It's basic, the information we input in the system. Amount, name. Not necessarily what is on the paper. Actually, the amount, the system will only already know. But it's still very basic. The screen is simple. It's simple.*

These innate systems' properties shape the cognitive system, the data that is produced, and how it is recorded. Recall from Chapter 5 that processing rules were pre-determined by external factors: legislation, political landscape, and the systems' designs (the IntSys was designed and implemented by Ministry X, and SIAFI by CGU).

6.3.3 Information Flow Model

Berndt et al. (2014: 433) affirm that the information flow model concerns itself with "how information moves and is transformed in the system (and any obstacles to effective information flow) – both formally and informally; whether any agent acts as an information hub . . . and how interruptions are managed". In other words, it describes the information flows between the agents of a system, the different communication channels utilized by them, and key flow properties. Following the model established by Furniss and Blandford (2006), data should be iteratively coded for the principles established by them: information movement, information transformation, information hubs, buffering, communication bandwidth, informal and formal communication, and behavioral trigger factors (see Appendix II for a detailed overview). Furthermore, they determine in their framework three distinct viewpoints for the information flow: a high level input-output view (depicted in section 6.2.1), an agent-based view, and a third view, based on the agentic

perspective, highlighting how information is buffered, filtered, transformed, and communicated in the system. Though they fail to consider the interactions between human agents and their technical counterparts in their original framework, this will not be the case here. In opting to leave out such interactions, Furniss and Blandford (2006) justify their decision due to the little computer-mediated interaction that took place in their study (applied to an emergency medical dispatch environment). This is not the case in the information process analyzed at Agency X. In fact, two very key moments in this process involve the communication between technical artefacts only, first at the reserve of cash stage (steps XXIII in Appendix VII) in which SIAFI communicates this to the Transparency Portal, and then again at the payment stage (step XXXVIII), when once again SIAFI feeds information to the Portal. Thus, such interactions also merit attention and will be discussed in this section.

6.3.3.1 Agent-Based View

According to Rajkomar et al. (2015: 185), the agent-based view "focuses on the principal agents within the system and the flows between them". As such, the main communication channels should be identified and discussed. Table 6.2 presents an overview of the different agents involved in the procurement process and what their roles are.

Communication between these different agents will be through different means, either via the IntSys, via e-mail or telephone, or face-to-face. How communication flows between agents is depicted in Figure 6.6. As can be observed, communication between agents takes place via the IntSys in points 1, 2, and 3 only. From that moment onwards, communication then takes place via either e-mail/telephone or face-to-face [*communication bandwidth* principle in DCog

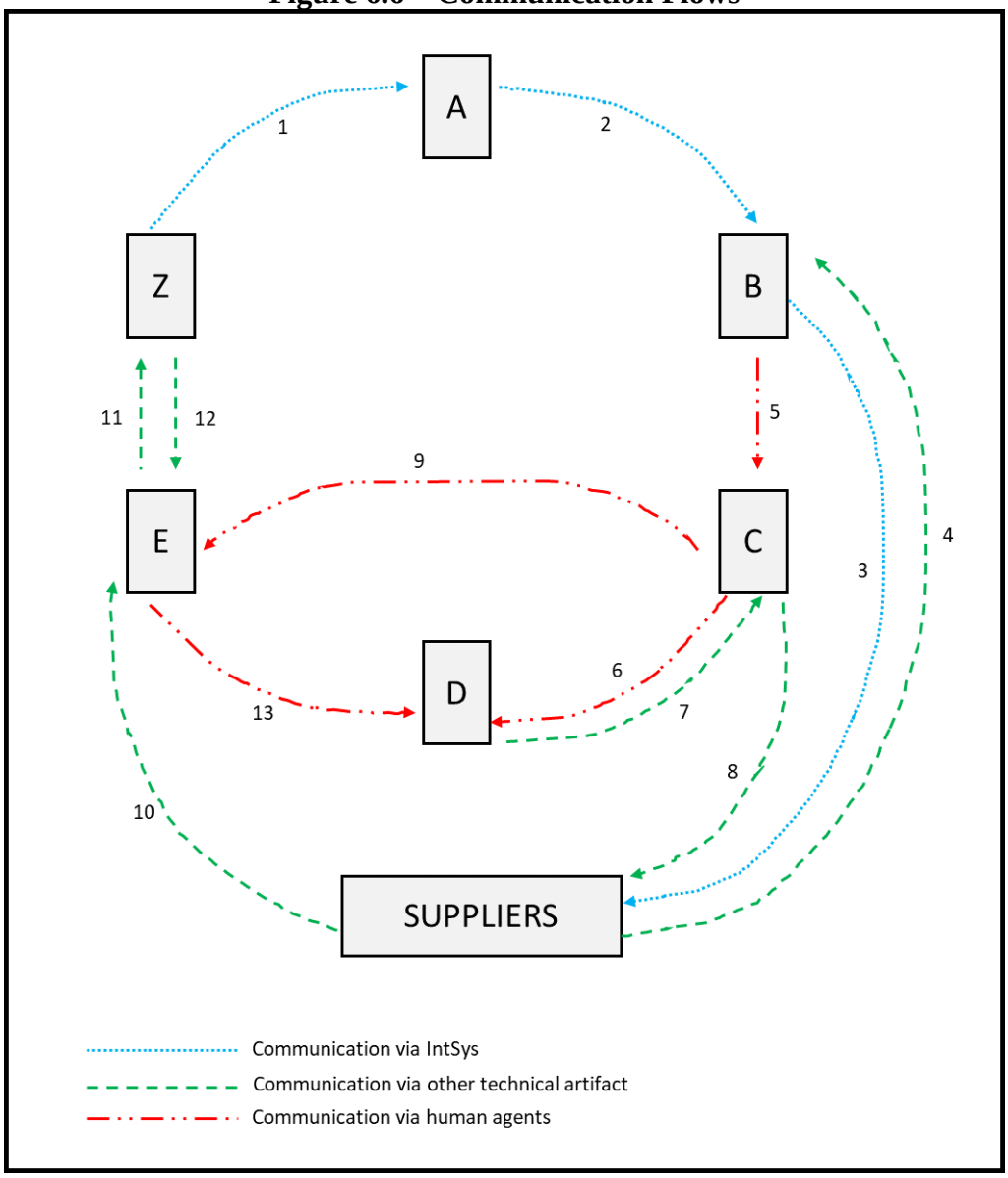
terminology]. Though the procurement process will be registered on IntSys throughout each of the procurement stages, the actual communication and coordination between the different participants takes place via other means and, internally, between teams B, C, D, and E, it will be face-to-face.

Table 6.2 – Summary of Agents Involved in the Cognitive System

Agent	Role
"Z"	Responsible for placing request on IntSys. Will be the agent responsible for triggering the entire procurement process.
"A"	Responsible for checking requests on IntSys and redirecting it to the person/team in charge for that particular product category ("B") through IntSys.
"B"	Responsible for identifying suppliers who can meet Z's requirement. Will make contact with suppliers and request quotes. "B" will also be the one to start a physical file (PF) which will move across agents of the process.
"C"	Will select the winning bid either by using IntSys to appoint winner or manually doing so. Will also be the one to handle the first point of contact with the financial team ("Reserve of Cash").
"D"	Financial Team who will be involved twice in the procurement process: (1) in the Reserve of Cash stage, which will allow the purchase to be confirmed; (2) in the payment stage, when process has been finalized. Responsible for entering information on SIAFI, the system which communicates with the Transparency Portal.
"E"	Responsible for finalizing the procurement process. Will confirm delivery and process invoice, before handing off process to the Financial team for payment.
Managers	Every team (Z, A, B, C, D, E) has a member of upper management overseeing their activities. They may intervene in the process at any time.
Suppliers	Suppliers are initially contacted at Stage III of the procurement process (see Table 6.1). One supplier will be selected at Stage IV when they will be expected to acknowledge the request and supply demand. They will later be in contact with "E" during Stage VII when they will be expected to invoice Agency X for their services.

This reflects, as discussed in previous sections of this Chapter, the fact that the process is led by the human components of this system. It also reflects the fact that many of the interactions inherent to this process will not be formally registered. Many of the exchanges and coordination amongst teams occur in the pockets of informality, an action that is encouraged by the physical layout of this organization, as discussed in a previous section of this Chapter.

Figure 6.6 – Communication Flows



From an agentic perspective therefore, information moves both through the technical artefacts, but also in a face-to-face manner. Each communication process and the main channels involved in each of these is presented in Table 6.3, accounting both for the communication that indeed takes place during the procurement process and possible points of interference. As can be

observed, there are stages in time that communication may occur, but not necessarily does, such as between team members and their respective managers.

Table 6.3 – Communication Channels

Process	Summary
Between "Z" and "A"	Communication between "Z" and "A" takes place exclusively via the IntSys.
Between "A" and "B"	Communication between "A" and "B" takes place exclusively via the IntSys.
Between "B" and suppliers	Communication between "B" and suppliers will take place via the IntSys/e-mail (when requesting quotes) and then back again via e-mail (when receiving quotes requested).
Between "B" and "C"	Communication will take place face-to-face when "B" delivers the PF to "C", prompting him/her to act.
Between "B" and team manager	If B's manager decides to intervene, then this will take place in a face-to-face manner. Will not necessarily happen.
Between "C" and financial department ("D")	Communication will take place face-to-face when "C" delivers the RoC form to them. The response will be via e-mail, when RoC has been confirmed and approved.
Between "C" and team manager	Communication between "C" and his/her manager will take place via the IntSys, when manager's approval is required for request (step XIX in Table 6.1). Any other communication that may eventually take place between both parties will be done face-to-face.
Between "C" and suppliers	"C" will communicate with supplier who has won bid via e-mail.
Between "C" and "E"	Communication will take place face-to-face when "B" delivers the PF to "C", prompting him/her to act.
Between "E" and supplier	Communication will take place via e-mail and, if further action is needed, via telephone. In addition, supplier is required to send a copy of the invoice via post.
Between "E" and financial department	Communication will take place face-to-face when "E" delivers a copy of the invoice to the financial department team.
Between "E" and "Z"	Communication takes place via e-mail to confirm delivery instructions. It can also take place via telephone if further instructions are needed.
Between "E" and team manager	If E's manager decides to intervene, then this will take place in a face-to-face manner. Will not necessarily happen.
Between "D" (financial department) and team manager	If D's manager decides to intervene, then this will take place in a face-to-face manner. Will not necessarily happen.
Between SIAFI and Transparency Portal	Data inputted into SIAFI will be fed into the Transparency Portal. This will take place at the RoC and Payment stages.

As gathered from the data collected, managers typically only get involved when they deem it necessary or believe an intervention is required. This will be discussed in further detail in the social structures model (section 6.3.4). The next section of this Chapter, section 6.3.3.2, will discuss in further detail how information moves and is transformed throughout the system.

6.3.3.2 Information Movement and Transformation

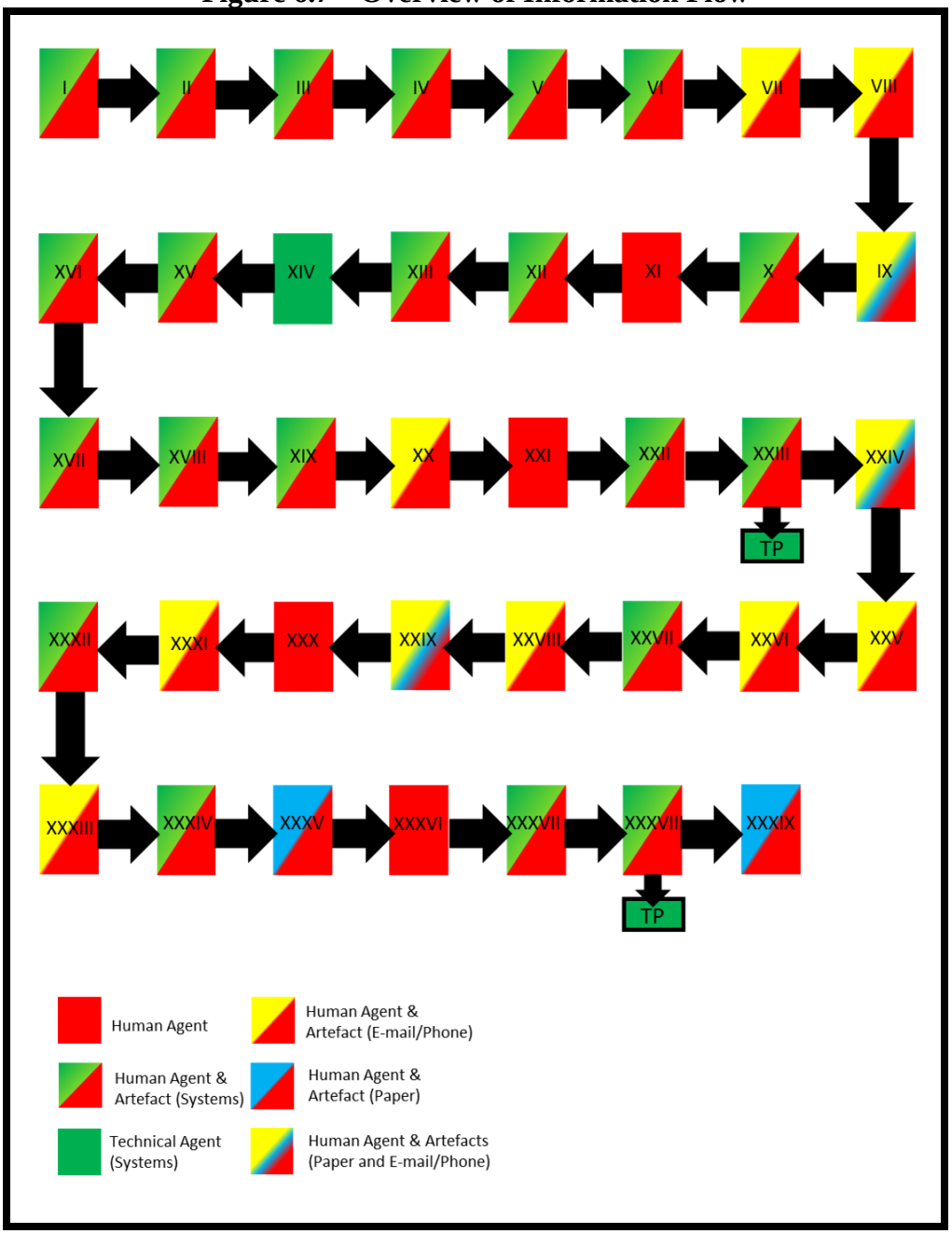
How information moves and transforms is of particular interest in a DCog theoretical framework. As Hollan et al. (2000: 177) explain, "cognitive processes involve trajectories of information (transmission and transformation), so the patterns of these information trajectories . . . reflect some underlying cognitive architecture". Furniss and Blandford (2006) add that information can move and transform in different ways, through different mechanisms. In the case of Agency X and its cognitive system, information moves through both artefacts and between participants (steps XXIII and XXXVIII, when information moves from SIAFI to the Transparency Portal).

Figure 6.7 (details of the activities in each of the steps can be found in Appendix VII), illustrates the way information flows through the entire system. As can be observed, only in a few instances does information move or is transformed exclusively due to the action of technical artefacts. In fact, quite the opposite, what allows the information to keep moving and transforming through the system is the action of human agents, who act as triggers.

The key mechanisms used to move information around the cognitive system are the technical systems (the IntSys and SIAFI), in addition to e-mail/telephone, and face-to-face. As

information moves through the system, it is also constantly transformed, as each step means more information that is being aggregated and added, until it reaches its conclusion.

Figure 6.7 – Overview of Information Flow



Another important takeaway from Figure 6.7 is the fact that it clearly illustrates that only two instances of the process are in fact registered on the Transparency Portal. Important to remember that this is a study about transparency and how it has failed to curb corruption. The Transparency Portal has been hailed as a mechanism towards achieving that. Moreover, as discussed in the previous Chapter, the Brazilian Transparency Portal has been highly commended as one of the best examples of transparency amongst the initiatives by various different countries often topping rankings in this regard. Yet, it is possible to observe that the process of procurement and budget execution is a long one, comprising 39 different steps (grouped into eight different stages), which touches upon several different groups of people. However, only two of these steps are recorded on the Portal, by people who are physically removed from most of the process, as discussed in the physical layout model section of this Chapter (section 6.3.1).

6.3.3.3 Information Hubs, Buffers, and Behavioral Trigger Factors

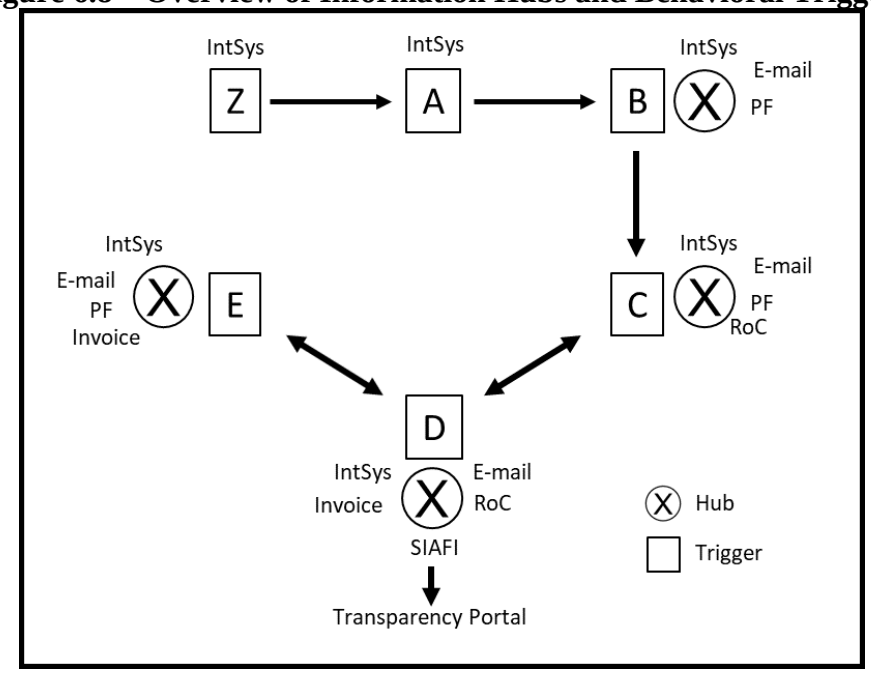
Figure 6.8 indicates four information hubs, defined as "points where information channels meet and different information sources are processed together" (Rajkomar et al. 2015: 187). In the case of the procurement process at Agency X, two of these hubs refer to points where decisions are made: selection of suppliers to select quotes from (B), and selection of winning bid (C), both key moments in the procurement process, since this is where the decision of how much to spend is made. These also happen to be the moments most susceptible to external influences and unethical decision-making, especially since the selection of suppliers to contact does not follow established criteria or set of norms/rules to follow. As explained:

Int18: The IntSys suggests a few suppliers based on purchase history or something in the system. That particular item is linked to certain suppliers. So we can contact them. But obviously we can check for other suppliers too. And each buyer researches the way they want to. It could be on the internet […] Then it's based on each person's criteria and what she[23]'s feeling, her perception.

INTERVIEWER: So there's no specific rule? For selecting a supplier?

Int18: No. The rule is the IntSys makes a few suggestions. The rest is up to each person, her way of working, what she finds on the Internet. We have to ask quotes to up to 10 suppliers. We then send it to the next stage when we have received at least 3 quotes back. So really, in fact, it's up to each one's criteria. So that person will do their research, their way. Obviously, if somebody asks you to do it a specific way, or via a certain supplier, you do it. You follow orders.

Figure 6.8 – Overview of Information Hubs and Behavioral Triggers



[23] *Int18* says "she" in reference to the female pronoun in Portuguese "pessoa" (person). This is therefore due to translation from Portuguese to English, not an admission that the person in question is a woman since *Int18* was not in fact singling out a specific person, but rather speaking in general terms.

All of the points in Figure 6.8, with the exception of Z, can be considered a potential buffer, since these are points which are subject to receiving new information which may or may not aid in the procurement process, and may in fact result in different decisions being made, or certain processes being held up in lieu of others. This will depend on level of urgency or shifting priorities, and may be due to how the individual prefers to work or what his/her manager wants him/her to do.

> *Int18: It's too many things. Too many processes. So I'll just take care of what I have to, and then when I can I'll go into the system to check what's pending. And then I'll check what's needed. Either contact the supplier again, or forward it to the next stage. But it's hard. And sometimes you'll get someone who then calls your manager and says it's your number one priority. So you drop everything else and only focus on that.*

As can be inferred from the quote above, the system itself, IntSys, acts as a buffer since it will not automatically notify the individuals (or trigger reminders) of pending processes, thus holding the information until the participant is ready to act on it (though the participant will already have an awareness of the process due to having received the PF).

As illustrated in Figure 6.8, behavioral triggers are also found in every single one of the points highlighted, starting with Z who will be triggered to act and place a request through IntSys when a need is identified. Team member A will then be triggered to act and redirect a request once it is received through the IntSys. Team member B will be triggered to act both when it receives the request through the IntSys and when quotes are received via e-mail from suppliers. Team member C, on the other hand, will be triggered to act when the PF is handed to him/her by B and when he/she receives the RoC from D. Team member D, will be triggered to act when he/she receives RoC documents from C, and invoices from E. For their part, team member E, will act when receiving the PF from C, and the invoice from the supplier. Thus, triggers are spread out

through the entire system. However, what triggers the behavior will vary: it may be an identified need, a request through the IntSys, an e-mail, a document, or the individual who delivers the PF. Different artefacts or individuals will trigger responses.

6.3.3.4 Communication Bandwidth and Informal/Formal Communication

Communication bandwidth, which refers to face-to-face communications (Furniss and Blandford 2006) is an extremely important aspect to highlight since it constitutes the main form of communication between those internally involved in the procurement process within Agency X (please refer to Figure 6.6). This is due to how the process is moved along within Agency X (the PF acts as the behavioral trigger as reviewed in previous sections), and the physical layout of the work space at Agency X. This set up also allows for a high level of informal communication, with participants being able to overhear each other's conversations and often engaging in an informal way with one another, in discussions that have little to do with the work processes in question. Informal communication serves a myriad of different purposes: to transmit procedures, status, issues. It can both have a positive role by facilitating processes, but also a perverse effect, by allowing procedures to be corrupted. The high prevalence of informality at Agency X is one of the factors that support unethical decision making and collective moral disengagement, as will be reviewed in subsequent sections of this Chapter.

6.3.4 Social Structure Model

Although Furniss and Blandford (2006) state the importance of the social structure model in their DiCoT framework, this is one of the least developed models (Sharp et al. 2006) and in many studies, skipped over altogether (Berndt et al. 2014; Furniss et al. 2015). The social structure

model is defined as a "model focuses on the social relationships, responsibilities, knowledge, and goal sharing between the individuals, and how this influences the computation of the system" (Berndt et al. 2014: 433). In their framework, Furniss and Blandford (2006) cite two principles: social structure and goal structure, and socially distributed properties of cognition.

In regard to the cognitive system at Agency X under analysis, it seems appropriate to further expand this model due to the emergence of themes that arose as a result of the data gathered and coded. In Hutchins' (1995) seminal book, *Cognition in the Wild*, in which he elaborated the DCog theoretical framework, several social structure-related principles are cited. The "social structure and goal structure" principle in fact serves as an umbrella for several others, amongst which, goal tree and parity, hierarchy and high-level coordination, division of labor. On the other hand, "socially distributed properties of cognition' serves as an umbrella for a series of principles: distribution of knowledge, sequential control of action, and mediating structure. All of these principles emerged upon analysis of the data. Since the "social" component at Agency X and how it drives the information flow through the system is significant, each of these principles will be reviewed individually.

6.3.4.1 Goal Tree and Parity

Hutchins (1995: 202) establishes that the principle of goal tree refers to when "we give each member of the team responsibility for a main goal and for the sub-goals required to achieve the mail goal" and uses the term "parity" to refer to goals that are clear. In the case of the cognitive system under analysis, it became apparent that goals are well established and that individual participants are clear on what their roles are in achieving that. As discussed throughout this

Chapter, individual roles and attributions are well defined. The goal of the system, from the perspective of the agents involved, is to meet the supply needs of "Z". In order to achieve this goal, each team has a well-defined goal, and will move the process along once their individual goal has been met. For example, "B" will only move the process along to "C" once he/she has compiled a list of three quotes from three different suppliers. "C" on the other hand, will only hand off the process to "D" once a winning bid has been selected and he/she has received approval from his/her manager to move forward with Z's request (please refer to Figure 6.1 and Appendix VII for a full description of tasks). In other words, every single member of this system has a clear view of what needs to be done in order to complete this process. The interaction with artefacts and how these will aid in completing tasks is also well defined.

Sometimes, however, goals can diverge from what the objective of the process is. And when this occurred, information breakdown and opportunities for wrongdoing arose.

6.3.4.2 Hierarchy and High Level Coordination

Hutchins (1995: 256) affirms that "a common solution to the problem of reaching a decision is to grant a particular individual the authority to declare the nature of reality". He further adds that "The authority thus becomes a special kind of cognitive apparatus; one that tracks the center of gravity of the entire community in conceptual space at each point in time" (Hutchins 1995: 257). In the case of Agency X, displacement of responsibility in lieu of a higher authority is a theme that recurrently emerged in the interviews conducted. Quite often individuals interviewed reported delegating their power of decision to their managers, and making it clear that they were following orders:

Int21: Obviously, if somebody asks you do it a specific way, or via a certain supplier, you do it. You follow orders.

Int13v2: It doesn't matter. You have to do what they tell you to do. And if they're telling you to do something before the other [processes] then you do. Sometimes, they're colleagues, and it's a special favor. And it's not nice. There are other people also expecting their orders and other priorities too. But you do it.

Int3: He [the manager] is very nice, as long as everything goes through him. He is very controlling. He dictates what has to be done. And you do it.

Hutchins (1995: 201) affirms that when goals and decision-making are delegated to those in a position of authority "the cognitive load is not only distributed; it is also lessened by the distribution". This certainly seemed to be the case at Agency X, as the data gathered and analyzed revealed. Moreover, when it came to unethical decision-making, this power structure was often used as a source of moral disengagement, as will be discussed further in section 6.4, corroborating Hutchins's assertion that the cognitive load is lessened.

6.3.4.3 Division of Labor

Hutchins (1995: 176) establishes that "all divisions of labor, whether the labor is physical or cognitive in nature, require distributed cognition in order to coordinate activities of the participants". This distributed cognition involves, according to him, cognition of the task, and cognition of coordination between members.

As discussed in previous sections, participants had well established goals, which they were very much aware of. This was facilitated by the cognition of coordination, in addition to cognition of their own task. In other words, participants were aware of what their role was, but also what the roles of others were, which supported the distribution of cognition. Artefacts also played a role in that. The IntSys for example, kept a register of who had accomplished what in terms of advancing processes. In addition, the PF, acting as a redundant source of information, also served that purpose.

However, this was subject to breakdowns. As Hutchins (1995: 219) explained in regards to his own study of navigation teams: "One important aspect of the social distribution of this task is that the knowledge required to carry out the coordinating actions is not discreetly contained inside the various individuals". If an individual failed to register information on the IntSys or in the PF, this division of labor and distribution of knowledge could become compromised. And this in fact did happen.

> *Int11v2: Before moving the process forward, we have to indicate on the system that we have. And if I forget to do that, the system won't know. It should be able to already track the progress, everytime I accomplish a step. But no. I have to keep going back in the system to do that.*

Moreover, as the data gathered suggests, this could be either intentional or unintentional. Individuals could withhold information from the artefacts due to being instructed to circumvent procedures, or unintentionally forget to include information on the PF or signal change of status on the IntSys.

6.3.4.4 Distribution of Knowledge

Distribution of knowledge refers to how knowledge is shared amongst individuals regarding the nature of tasks (Hutchins 1995). Knowledge regarding attributions and tasks can be shared either by observation, explanation or by sharing of documents (e.g. manuals). In the case of Agency X, knowledge sharing regarding tasks, job roles, and systems occurred mostly informally. In other words, one team member passing along their knowledge to the next in an informal way. Manuals are made available on the intranet at Agency X meaning that there is some redundancy regarding the knowledge load. However, the main source of information is the individual:

> *Int21: No, there was no training. They came, they sat with us and they told us what to do. And then they left.*

> *Int23: I learned everything from [CO-WORKER]. I don't think we had any training, not that I remember. It was [CO-WORKER] who mostly taught me what I know.*

As a result, rules and norms tend to be lax. For the most part, the knowledge that is imparted by an individual is worth more than the knowledge that is formally registered in a manual.

> *Int28: I remember than when I started I downloaded all the guidelines from the intranet. And I saw that there were things there that we weren't doing. So I told my manager. And he said, "you're right, we should do those things". But we never did. I tried a few times. But my co-worker told me "no, it's not how things are done". And I noticed that my manager didn't really mean for the guidelines to be followed.*

6.3.4.5 Sequential Control of Action

Hutchins (1995: 198) posits that "A procedure is sequentially constrained if the execution of any enabled operation will disable any other enabled but as yet un-executed operation". He goes to state however that it is possible to change this feature by manipulating "the enablement conditions of various operations" (Hutchins 1995: 199).

Regarding the procurement process at Agency X, in order to move to the next stage in the procurement process it is necessary to have completed the previous stage first. For example, in the sequence of events, in order for team member "B" to hand off the process to "C", he/she will have had to gather a minimum of three quotes from three different suppliers. "C" would then technically only be able to request that the financial department reserve the cash for this purchase after verifying quotes and selecting a winning bid based on the best offer conditions (i.e. lowest price). As this process moves forward, team members are required to register this information both in the IntSys and in the PF. However, as Hutchins wisely observes, it is possible to manipulate the sequence if certain mechanisms are enabled (or disabled, in this instance). As quoted in section 6.3.2.3, it is possible for steps in the process to be circumvented and skipped altogether, something that is not uncommon. Though formally, the sequential order of tasks would need to be observed (according to norms and legislation), these can be sidestepped in the name of speediness or buyer preference:

> *Int19v2: "It does happen that we pay in advance. Without the invoice. There are some companies that demand it. Not many, but there are a few. And then we do. We print the cover sheet off the IntSys and we take it to the finance department. And then later we'll go back and register everything when everything does get delivered. Then it's like… my manager will call up the finance manager. And they'll sort it out between them. I'll just fill out the details and take the paper to them.*

Int13v2: […] this happens a lot, when it's the end of the year especially, the number of requests increase exponentially. Everyone is rushing to spend the budget. So we had this huge pile of requests. And my manager gave the go ahead to proceed without the proper documentation. But the document should have arrived later. But nobody remembered. So we closed these processes. And then the auditor came. And none of them had it. But they worked things out. They figured it out. Yeah… it's not right, I know.

Note that though steps in the procurement process were not observed, this was later registered as if it had been.

6.3.4.6 Mediating Structure

According to Hutchins (1995: 316), "The thinker in this world is a very special medium that can provide coordination among many structured media – some internal, some external, some embodied in artifacts, some in ideas, and some in social relationships. . . From this perspective, what we learn and what we know, and what our culture knows for us in the form of artifact and social organizations, are these hunks of mediating structure". Thus, this principle refers to how communication and social interaction takes place, which can be either through artefacts or language. As reviewed in the artefacts model section, communication between human agents can take place through artefacts. But, as later discussed in the information flow model section of this Chapter, most of the communication that takes place between members of this organization is verbal, often informal.

Thus, spoken language becomes a more important mediating structure than written form. In terms of formally registering processes, this means that much of what is communicated is not

formally registered. This characteristic of the system will obviously play a role in supporting wrongdoing and unethical decision-making.

6.3.5 Evolutionary Model

The final model in Furniss and Blandford's (2006) DiCoT framework is the evolutionary model. Berndt et al. (2014: 433) explain that "the evolutionary model shows how the system has changed over time". The objective is to demonstrate why tasks are arranged the way they are. Two principles are included here by Furniss and Blandford (2006): cultural heritage and expert coupling.

Regarding the development of technical artefacts – the IntSys and SIAFI – and how they came to be deployed at Agency X and structured the way they are, recall that in Chapter 5, this topic was discussed at length. In summary, systems evolved and changed in accordance with legislative changes which required that agencies within Ministry X be integrated and information be made available on the Transparency Portal on a real-time basis. Regarding the social structures and cultural heritage, allusions to "it's always been like this" and "it's the way things are done" were referenced quite often by those interviewed. The data gathered indicates that certain cultural elements, i.e. hierarchy, informality, distribution of knowledge etc, are long-held traditions and values, indicating that they are resistant to change.

The principle of expert coupling refers to the level of interaction a participant has with the system and thus, how tightly coupled he/she will become with it. As demonstrated throughout the other models, the level of interaction is high. New participants will quickly be brought up to speed

and introduced into the system so as to absorb and replicate the way things have traditionally been done. Once again, this reflects how resistant to change the entire system is. This mindset of the system is reflected in the way transparency was deployed at Agency X. Though the objective of these systems was formally to create a more accountable and transparent system, old practices have persisted. The goal of this system is to meet procurement needs and execute budget and that remained unchanged.

In summary, this section of the present Chapter analyzed data through a distributed cognitive lens (Hutchins 1995), by utilizing the DiCoT methodological framework delineated by Furniss and Blandford (2006). It did so by coding data for principles outlined in their model (see Appendix II). Themes that emerged from the data could not only be constricted to those principles. Referring back to the DCog theory by Hutchins, evidence for additional principles were found and outlined in this section, such as the extension of the Artefact and Social structure models.

The next section will review data in accordance with the moral disengagement theory by Bandura (1986).

6.4 Moral Disengagement at Agency X

The second line of inquiry of this thesis refers to the ongoing events of wrongdoing and corruption that take place at Agency X. As discussed at length previously, these practices have continued to take place in spite of the deployment of systems that were meant to curb them.

This section of this Chapter will thus review in more detail the practices of wrongdoing that continue to occur at Agency X. Data will then be analyzed through the lens of Bandura's

(1986) moral disengagement theory (MD) in order to determine its influence on the cognitive system, more specifically, the breakdowns of cognitive processes. The objective of this section is therefore two-fold: (1) determine whether moral disengagement mechanisms are indeed present through the application of Moore et al.'s (2012) Moral Disengagement Measure, and (2) determine in what way MD is present by utilizing Bandura's (2006) *Manual for Coding Modes of Moral Disengagement* as a guide for coding procedure.

6.4.1 Wrongdoing and Unethical Decision-Making

As previously introduced in Chapter 5, several instances of ongoing corruption were identified at Agency X. It must be recalled that, for the purposes of this research, the definition adopted for corruption is the one introduced by Palmer (2008: 108):

> *"Organizational wrongdoing consists of behavior perpetrated by organizational officials (i.e. directors, managers, and/or employees) in the course of fulfilling their organizational roles that is judged by social control agents (i.e. prosecutors, regulatory agency officials, judges, journalists etc.) to be illegal, unethical, or socially irresponsible. Collective organizational wrongdoing involves the sustained coordination of multiple organizational participants".*

Corrupt practices at Agency X were identified at the "investigative" stage of this research (as reported in Chapter 4). Then, through the course of the interviews conducted, this information was checked and re-checked several times, with more details of the illegal practices emerging. This process of uncovering common practices adopted at this Agency was an interesting one, since it often required questioning participants in different ways during the course of the interview. For example, when initially asked if corruption occurred there, nearly everyone was emphatic in

denying that such practices took place (90% of responses). However, throughout the course of the interview, either the interviewee would voluntarily offer information regarding actions that they deemed "wrong" or "illicit", or the interviewer would probe certain topics of conversation further making use of alternative labels (e.g. wrong, incorrect, non-conforming, deviating from procedures etc.). This then resulted in the description of practices that could be classified as corrupt, since they, as defined above, deviated from laws, norms, procedures or could be classified as unethical. For example, towards the beginning of one of the interviews conducted, when discussing the deployment of systems, this individual affirmed:

> *Int5: They told us at the Financial Department when they were implementing it [Transparency]. Not because we would do anything wrong, because we don't. We do things extremely correctly, but just so we would take extra extra care. But we already did before.*

Later in the conversation, when we had begun to talk about procedures, Int5 volunteered the following information:

> *Int5: We closed a contract, but it's an unusual contract and not foreseen by the system. So now we have to put an attachment to the contract to conform it to the system. So we have to somehow make it work. It's crazy. But it's already signed, […]. We've had this contract since 2008 and it's valid until 2018*[24]*. Now they signed a new contract with the same company. It's all for the same thing. The same product. The material is the same. It makes no sense. So we have these two contracts and they're both valid. It's a mess. We have to spend a minimum amount every year with the supplier based on this contract. And we have to spend a minimum amount based on the new contract. But it's for the same thing. And the new amount fixes prices at a higher price. So we're going to start ordering based on the new contract and spending more. But the old contract is valid too, so we're paying for that too. I don't know who's making money off of this. But somebody certainly is. And I asked my manager. But he just told me to do it. So I did, who am I to question it?*

[24] Interview was conducted in 2015.

This pattern of denying any misconduct at Agency X, only to later reveal acts that they deemed wrong (under different labels, never referring to it as corruption), repeated itself through several of the interviews held, which in itself is a reflection of moral disengagement as will be discussed in more detail in subsequent sections of this Chapter.

The types of wrongdoing identified can be categorized as follows: nepotism, kickbacks and bribery, bidding process irregularities, and civil servants providing services to the Agency. In addition, a fifth type of wrongdoing was identified which involved skipping steps in the bidding process, which resulted in massive overspending and financial losses to the government (see Table 6.4). Though this might not be regarded as a serious form of corruption, it did consist nevertheless in corrupting a formal process, which is considered a serious ethical violation and is subject to disciplinary action. All of these will be described in more detail below.

Table 6.4 – Summary of Incidences of Corruption at Agency X

Type	Summary
Nepotism	Hiring of family members by circumventing recruitment processes.
Fraudulent bidding processes	Most common form of corruption at Agency X. Circumvention of bidding processes to favor certain suppliers in lieu of others.
Kickbacks	Percentage of contracts paid to "middlemen" or consultants who formerly worked for the government.
Civil Servants who supply their own services	Civil servants who illegally supply their own services to Agency X.
Non-observance of procurement procedures	Ignoring procedures and skipping stages resulting in financial loss and over-expenditures.

6.4.1.1 Nepotism

Civil servants must go through a formal and extensive process in order to be hired within the federal government. This typically involves going through an exam whereby only those that achieve best results are hired. However, there are ways in which this process can be eschewed and this is a practice that has very often been raised by civil servants as a recurring corruption process, both by those interviewed in the investigative phase of this research and in surveys conducted by Vox Populi (Nóbrega 2016).

Distorting the hiring process is achieved by use of influence on those responsible for managing the testing phase. A common phrase heard in the investigative phase was "that position was already earmarked", meaning that the hiring process was not a fair one since the candidate that would win the position, at the end of the process, had already been determined from the start. In the case of Agency X, the employees who were interviewed noted that this does in fact occur there as well. However, they reported that a more common practice of nepotism occurs through transfers. Either a spouse or a parent would transfer their relatives from other governmental agencies to positions that were beyond their original paygrade – and, as a result, those transferred did not necessarily present the expertise or skillset required for that specific position – or, as reported, there was a specific instance whereby a position was created for the sole purpose of accommodating the relative of a director at the agency. This new position was not required by the organization and consisted mostly of organizing events, something the agency rarely is involved with.

6.4.1.2 Fraudulent Bidding Process

Within the wider sphere of the federal government, frauds concerning the bidding process are regarded as the most common source of corruption by civil servants (Nóbrega 2016). The fact that it occurs within this specific agency is consistent therefore with the general trend. Frauds in this process can occur in several ways and, in the case of this specific agency, they were observed in the form of favoring certain suppliers over others, in exchange for favors or benefits (these are referred to as "*um pequeno agrado*", loosely translated as a "small gift" or "small token of appreciation").

Circumventing the bidding process can be achieved in several ways: first of all, the legislation itself pertaining bidding processes allows for exceptions. As can be observed in Appendix VII, the labels used to describe the non-observance of the bidding process are vague and non-specific – "inapplicable" and "ineligible". What this means is that no bidding will take place and the legislative exceptions are used to justify not doing so.

Secondly, the process of choosing the suppliers whom to contact for quotes is non-specific and subjective. There is in fact no specific rule regarding this, and the process allows for buyers to apply their own personal criteria. As reported in section 6.3.3.3 of this Chapter:

> *INTERVIEWER: So there's no specific rule? For selecting a supplier?*
> *Int18: No. The rule is the IntSys makes a few suggestions. The rest is up to each person, her way of working, what she finds on the Internet. We have to ask quotes to up to 10 suppliers. We then send it to the next stage when we have received at least 3 quotes back. So really, in fact, it's up to each one's criteria. So that person will do their research, their way. Obviously, if somebody asks you to do it a specific way, or via a certain supplier, you do it. You follow orders.*

What this means is that either the buyer can circumvent this process for their own personal gain, or an order from higher up can be made and the buyer will comply (especially since as discussed previously, hierarchy and power structures are a strong characteristic of this work environment). In terms of registering this procedure however, this will be done as normal, giving it the official "make over" that everything followed according to procedure.

Thirdly, there were reported incidents of invoices that were processed not corresponding to the actual purchase. As explained:

> *Int15v2: I received the invoice and it demonstrated that there we were paying for more than what was ordered [quantity ordered was superior to what was in fact delivered]. So my manager took it from me and then a few days later gave me a new invoice. And that information, about the details of the quantity, that wasn't there anymore [quantity had been omitted but amount to be paid remained the same]. They had changed it. He told them to change it and they did. And then he just gave it to me to process it as I normally would.*

Fourthly, as the example illustrated at the beginning of this Chapter demonstrated, more than one contract may be signed with the same supplier. Though formally it will look different (recall that an attachment had to be added because it did not conform to what was foreseen by the system), in reality, as the interviewee reported, it was for the exact same product category.

6.4.1.3 Kickbacks for "Middlemen"

A practice that is commonly observed refers to former civil servants who leave the government in order to set up their consulting practices. Such was the case with former Chief of Staff, José Dirceu, during President Lula's tenure (2003 – 2010) who has been arrested twice due

to his connection with two of the largest corruption scandals to have engulfed Brazil, *Mensalão* and Operation Car-Wash (detailed in the previous Chapter). After being forced to resign, José Dirceu set up a consulting practice that aided private corporations in winning governmental contracts. In reality, this was a huge corruption scheme, which translated into a R$ 10.2 million[25] financial gain for him.

Though the kickback scheme exerted at Agency X does not amount to the same magnitude as the one practiced by José Dirceu, the procedure is exactly the same. Former government employees will use their influence to win contracts for private corporations and a percentage of these contracts will be funneled to these "middlemen" in exchange for their services. These instances of corruption were only observed in the case of larger and long-term contracts.

It is important to note that these former civil servants were not lower-level employees when they left the government. On the contrary, they typically occupied the highest levels in the hierarchy. As a result, when questioned why they would go along with such a scheme, the civil servants involved reported that they felt obligated due to the weight of hierarchy. Though these middlemen were no longer their direct boss, the employees noted that they felt they could still jeopardize their careers, in case they decided to report these occurrences, so they acted under the pressure of the power imbalance between them.

6.4.1.4 Civil Servants Who Both Offer and Contract their Own Services

The Brazilian legislation prohibits civil servants from supplying services to the agencies where they work at due to a conflict of interest. There are ways of circumventing this law however

[25] Approximately US$ 3.15 million.

which involves naming someone else – such as a relative – the owner of their company, making it seem, at least from a legal standpoint, as if there were no conflict.

In practice, those involved know precisely who the true owners of those companies are and these bidding processes are won precisely because of the personal relationship they have within the agency. Such is the case at Agency X, where one of the civil servants, in addition to his work in the public sector, also owns a catering company and is hired by the upper management for every single event they organize, such as end of year parties. Important to note that the services provided by this individual not only are typically more expensive than those provided by other suppliers but, according to those interviewed, the service provided is of lower quality. Furthermore, civil servants remarked that, on the day of the events, this individual does not make his way to the office, but instead goes to the event location to prepare it. This day-off however is still compensated for his work at the office, generating a certain level of discomfort in view of the fact that he is remunerated twice.

This apparent preferential treatment was achieved, according to those interviewed, by creating close ties to upper management and apparently being more willing than most to engage in illicit activities. Not only has this preferential treatment translated into these revenue opportunities, but also those interviewed reported that he is consistently favored over others for promotions and raises.

6.4.1.5 Skipping Stages in the Procurement Process

As previously discussed, the procurement process that must be followed when making purchases consists of eight stages. There have been instances when one of these steps, critical to budgetary control, had been consistently overlooked: the reserve of cash ("*empenho*") stage.

The main reason given by those interviewed for skipping this step altogether was the bureaucracy involved in observing every single stage of purchase. Thus, to speed things up, they claimed, shortcuts had to be taken. The result of this action was that it negatively impacted the financial planning of this office and often resulted in overspending. The solution for this typically involved requesting the Ministry for more cash, thus generating deficits for the federal government. In addition, it resulted in many unnecessary purchases that were made simply because the cash could be easily obtained by the Ministry. The justification in doing so presented by those interviewed was that more money spent demonstrated the need for a bigger cut of the budget and would aid in budgetary negotiations for the following fiscal year. This adverse practice was therefore portrayed as positive and necessary.

Surprisingly, this practice ceased to occur shortly after I first interviewed the employees at Agency X in 2015. When I was back in 2016 and questioned them about this, I was informed that it was no longer ongoing due to budget cuts by the federal government. Following the re-election of then President Dilma Rouseff in 2014 (impeached in August of 2016), a huge deficit in government accounts was uncovered and, as a result, the entire federal budget, which was already 26.5% less than the 2014 budget, suffered further cuts – R$ 69.9 billion[26] - the following year (2015). As a result, expenses became more tightly controlled and an express order was given from

[26] Approximately US$ 21.6 billion. It is important to note that President Rousseff's mismanagement of the federal budget formed the basis for the impeachment process conducted against her.

the Ministry that every single purchase would need to be approved beforehand, forcing Agency X to start strictly observing the "reserve of cash" stage in the procurement process. As explained:

> *Int9: We had to. If the money is there, we have to spend it. Because if we only spend our yearly budget minus 10%, that's what they're going to give us the next year. Because they're going to think we don't need it. So we have to spend it.*

A year later, when asked about this practice, the same interviewee then clarified that it had ceased to exist:

> *Int9v2: Oh no, now everything's changed. The order came for us to stop because there was no more money. Dilma cut the budget and then all of a sudden there was no money to pay the suppliers. And they keep calling us asking "where's the money" and there is nothing we can do. We don't have the money. Pretty soon we won't even have money to pay for our electricity. I dread when they call me, I keep wanting to avoid the calls.*

This incident highlights that it is possible for pernicious practices to be stopped under exceptional circumstances, and that the Ministry can and will exert control over agencies under its command when willing to do so.

In summary, corruption at Agency X can take several guises. Moreover, the system that should curb this from happening can be circumvented in several ways. Note that not everyone that takes part in these acts directly benefits from it. In fact, based on the evidence gathered, it seems most do not. Nevertheless, they indirectly participate in it and support it, either by registering erroneous information on the system which they are aware do not correspond to reality or by following orders and selecting a supplier they know are not the best option, but only because it is for someone else's personal benefit.

In the next section of this Chapter, the theory of moral disengagement will be reviewed, and data will be analyzed so as to identify in what ways its mechanisms have allowed for corruption to persist within this environment.

6.4.2 Moral Disengagement

In this section data will be analyzed through a moral disengagement theoretical lens. This will be done in two parts: first by analyzing the data gathered as a result of applying Moore et al.'s (2012) Moral Disengagement Measure; second, by coding data for moral disengagement mechanisms, in accordance with Bandura's (2006) guidelines.

6.4.2.1 Moral Disengagement Measure

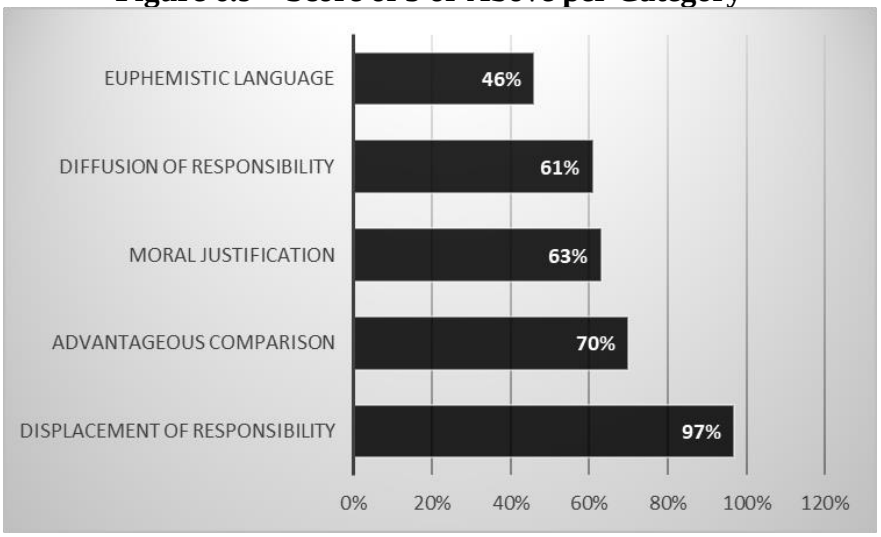
Moore et al. (2012: 2) argue that a predictor for unethical behavior is an individual's inclination to morally disengage, "that is, an individual difference in the way that people cognitively process decisions and behavior with ethical import that allows those inclined to morally disengage to behave unethically without feeling distress. Broadly speaking, we know that how individuals process, frame, or understand information relevant to ethically meaningful decisions plays an important role in their ethical and unethical choices".

To that extent, they have devised the Moral Disengagement Measure, which was applied to those interviewed at Agency X (as presented in Chapter 4). As they explain, the Moral Disengagement Measure constitutes a validated and parsimonious form of measuring an individual's propensity to disengage. It is composed of eight questions measured on a 7-point Likert scale ranging from "strongly disagree" (1) to "strongly agree (7) (see Appendix IV), each

of which measures one of the mechanisms established by Bandura (1986; 1999; 2016): moral justification; euphemistic labeling; advantageous comparison; displacement of responsibility; diffusion of responsibility; minimizing or distorting harmful effects, attribution of blame; and dehumanization.

As can be visualized in Figures, 6.9, 6.10, and 6.11, results confirm that individuals at Agency X present a high propensity for morally disengaging. 97% of individuals scored 5 or above in at least one of Bandura's constructs; 46% of individuals recorded a score of 5 or above in at least five Bandura's categories of moral disengagement[27].

Figure 6.9 – Score of 5 or Above per Category[28]



[27] Unfortunately, a similar set of data is not available for other country governments. As discussed in previous chapters, this is the first time the MD theoretical framework was applied to a public institutional setting. This absence of data should serve as motivator for future studies.

[28] None of the participants signaled a score of higher than 5 for the three moral disengagement mechanisms omitted from Figure 6.9: dehumanization, attribution of blame, and minimization.

Figure 6.10 – Number of Individuals Who Scored 5 or Above In 1 or 3 Constructs

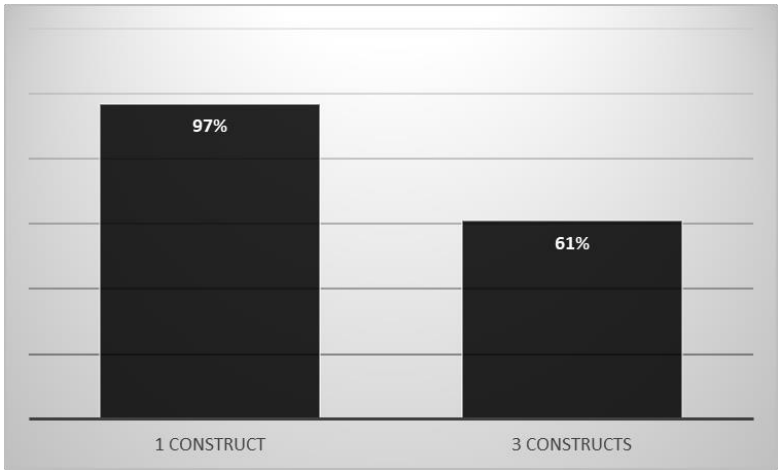
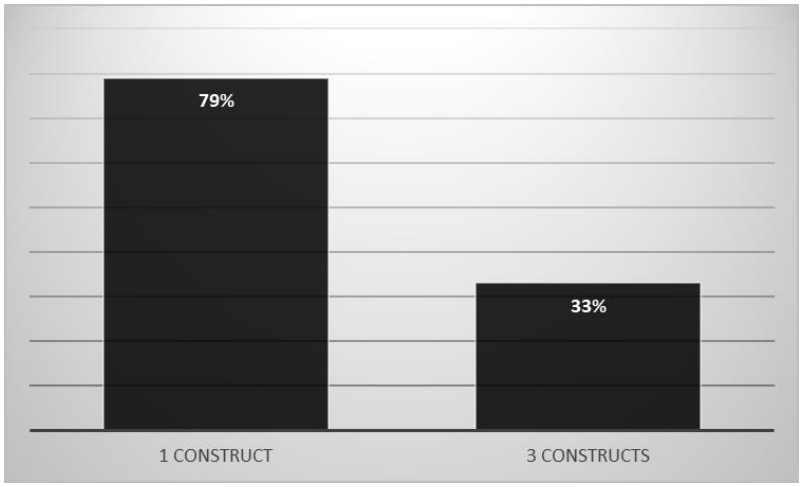


Figure 6.11 – Number of Individuals Who Scored 6 or Above In 1 or 3 Constructs



79% of individuals recorded a score of 6 or above in at least one of the constructs (Figure 6.11), with 33% scoring 6 or above in at least three different categories. This is significant since, according to Moore et al. (2012), there is a positive correlation between the propensity to morally disengage and engaging in unethical decision-making. Thus, in an environment where most people present a high propensity towards morally disengaging, there is a greater chance that corruption will take place.

Another interesting finding refers to the categories in which individuals most scored highly. Over 60% of individuals tested registered a score of 5 or above in the categories: displacement of responsibility, advantageous comparison, moral justification, and diffusion of responsibility. The highest rated mechanism was displacement of responsibility (97% scored 5 or above), reflecting the strong hierarchical culture reported in section 6.3.4.2 of this Chapter. These results are also reflected in the coding of data, as per Bandura's (2006) *Manual for Coding Modes of Moral Disengagement*. This will be discussed in the next section.

6.4.2.2 Coding for Moral Disengagement

In the previous section, moral disengagement was measured quantitatively by utilizing Moore et al.'s (2012) Moral Disengagement Measure. This form of measuring for moral disengagement mechanisms is useful in the sense that it indicates the presence of such mechanisms and, consequently, the propensity of individuals to engage in unethical behavior. In order to add further insight into this analysis, in this section, data will be analyzed in a qualitative manner. This was accomplished by coding transcripts of the interviews that were conducted (see Chapter 4 for details).

Coding was carried out by following the guidelines set forth by Bandura (2006) in his *Manual for Coding Modes of Moral Disengagement*. As White et al. (2009: 46) explain, Bandura's manual "includes formal definitions of each of the mechanisms and exemplars representing the different ways in which moral disengagement is manifested". Table 6.5 is a summary of the moral disengagement mechanisms which were evident.

As can be observed, data gathered was coded into five different categories of moral disengagement: moral justification, advantageous comparison, euphemistic labeling, displacement of responsibility, and diffusion of responsibility. No evidence of dehumanization, attribution of blame or minimizing effects mechanisms was found. This is consistent with data presented in Chapter 5 regarding the presence of moral disengagement mechanisms in the discourse of the perpetrators of the Car-Wash corruption case. As discussed in section 5.2.5, dehumanization, attribution of blame, and minimization (or distortion of consequence) sit at the victim *locus*. In instances of corruption, the victims of such acts may be difficult to identify, particularly when the victim is an unseen entity such as civil society at large or public coffers. This would probably explain why such mechanisms were not observed both amongst individuals involved in the Car-Wash case and within Agency X.

Table 6.5 – Overview of Moral Disengagement Mechanisms Observed at Agency X

Categories	Definition	Examples
Moral Justification	Moral, social and economic justifications are used to sanctify injurious practices and decisions, and to challenge regulations. Harmful actions are regarded as serving worthy purposes and actors reward themselves for performance.	"Sometimes you just need to get things done"; "we needed to meet his needs"; "if we follow procedure, it just takes too long"; "system is so inefficient, you just have to"; "somebody else would have done it"; "I'm just doing my job"
Advantageous Comparison	Comparing or contrasting harmful activities to actions that appear benign, of little consequence, or of lesser negative effect.	"there are many bad things going on out there"; "that is nothing [in reference to other actions]"
Euphemistic Labeling	The use of sanitizing, convoluted, and innocuous language to make harmful decisions personally and socially acceptable.	"It's not standard procedure"; "a favor"
Displacement of Responsibility	Evasion of personal accountability for harmful conduct and decisions by displacing responsibility on others (e.g. manager or authority). As such, they are not the actual agent of their actions. May intentionally keep themselves uninformed.	"He told me"; "if your manager tells you to, you have to follow orders"; "the order came from above"; "I don't even know what they do"; "I had no choice"

Diffusion of Responsibility	Personal responsibility is diffused through group decision-making, division of labor, or by attributing own behavior to the behavior of others (behavior mimic). Attention is shifted from the morality of action to operational details and efficiency of specific job.	"Everyone does it"; "it's common practice"; "it's the way things are done"

In the case of moral justification, Bandura (2016: 49) defines it as the act of morally and socially sanctifying "harmful practices by investing them with honorable purposes. Righteous and worthy ends are used to justify harmful means". At Agency X, moral justification often took the form of blaming what they believed to be inefficiencies (both procedures and systems) and some form of higher purpose such as, for example, to guarantee the same level of budgets for coming years:

> *Int9: We had to. If the money is there, we have to spend it. Because if we only spend our yearly budget minus 10%, that's what they're going to give us the next year. Because they're going to think we don't need it. So we have to spend it.*
>
> *INTERVIEWER: In what way do you spend it? Could you clarify?*
>
> *Int9: It's money that's been set aside for maintenance. It's set aside at the beginning of the year. And they set aside an 'X" amount, not knowing exactly how much we'll need during the year. So things like water, electricity… it all comes out of that money. But then we didn't use it all. So we use it for other things and classify it as maintenance. Like, for example, we have a monthly social. And they pay for it. They pay for it all. And it's that budget that it comes out of.*

In the exchange above, it is possible to observe that the act of needlessly spending money on things such as a "monthly social" is justified as a "need". If they do not spend it then, the

following year, the budget they receive is reduced. In other words, they are "forced" to spend that amount, meaning that wrongdoing is justified by a higher cause.

Moral justification was also used to justify bypassing procedures, such as the example below:

> *Int13: The system just doesn't work. It keeps crashing. And you keep asking them to fix. And they don't. We end up having to do things out of the system. Because otherwise it just takes too long. And you end up skipping steps. Eventually you go back and correct things on the system so that it's there. But you know, it's hard. The system stops us from doing things the way they're meant to be done.*

System failings were reported throughout most of the interviews. Several of those interviewed referred to it as a "school project" delivered by "interns". The failings are real, and one such occasion was witnessed by me. But the act of blaming the system to justify not following procedures is indeed moral justification, making the action of unethical decision making seem noble. Often, however, a certain exchange revealed not just one form of moral disengagement, but more. In the example given in a previous section regarding an invoice that was fraudulently changed in order to conceal what it in fact was paying for, the participant goes on to affirm:

> *Int15v2: And then he just gave it to me to process it [insert the information in the system so that it can be processed for payment] as I normally would. But I didn't like it. I really didn't.*
>
> *INTERVIEWER: But you processed it anyway?*
>
> *Int15v2: I had to. I can't go against my boss. And if I hadn't done it, then somebody else would have done it. And I would have got into bad terms with my manager over nothing. Because it was a one-off. He's a nice guy. I like him.*

In the exchange above, the employee was aware that the invoice did not match the actual request but processed the invoice for payment anyway. The employee quite clearly feels some level of discomfort ("*I didn't like it*"), but eases that feeling by first blaming the action on his manager ("*I can't go against my boss*"), which reflects displacement of responsibility. He then went on to affirm that "*somebody else would have done it",* reflecting diffusion of responsibility. Finally, he justifies his actions by affirming that "*I would have got into bad terms (...) over nothing. (...) it was a one-off. He's a nice guy*", reflecting the action of morally justifying his actions. As Bandura (2016: 28) affirms, people "are especially influenced by the evaluative reactions of those to whom they are emotionally attached and whose views they value", and this is clearly the case here. *Int15v2* expresses that he values what his manager thinks of him and uses that as justification in collaborating with a wrongful behavior.

With displacement of responsibility, Bandura (2016: 58) explains that individuals "view their actions as arising from the dictates of authorities. Because they are not the actual agents of their actions, they are spared self-condemning reactions". This particular mechanism was the most observed of all in the data gathered. A reflection of the strong hierarchy and power structure, it allows participants at Agency X, to carry out acts at the directive of their superiors whilst evading feelings of self-blame and self-condemnation, such as in the quotes extracted below:

> *Int18: Obviously, if somebody asks you do it a specific way, or via a certain supplier, you do it. You follow orders.*

> *Int3: So someone from above, comes and says "exceptionally, that's the way we'll do things".*

Int13v2: You have to do what they tell you to do. And if they're telling you to do something before the others then you do. Sometimes, they're colleagues, and it's a special favor.

Int5: But he just told me to do it. So I did, who am I to question it?

Int17: When I do something... I'm the one who is doing it, ok. But in the end, it's the manager who approves it. It's his name, not mine. Who is actually giving orders? It's him, not me.

Int3v2: I can argue against, but the final decision is the manager's.

Another MD mechanism that was observed quite frequently, was diffusion of responsibility. Bandura (2016: 62) explains that in this instance, "any harm done by a group can always be attributed largely to the behavior of others". This sort of disengagement mechanism supports cognitions such as "it's always been done this way" and supports the perpetuation of detrimental practices on the basis that that is the culture of that particular work environment. Another form of making use of this specific mechanism is by ignoring what is done by others:

Int6: I only know what's in my group. I don't know what goes on in the other teams.

Ignoring the action of others is a difficult task in an environment which is an open-floor work space. Recall, however, that the financial department does not share the same space as the purchasing team. They are in fact located on a separate floor, which means that though there is an awareness that not all processes follow procedures (especially since they are asked to break rules themselves, such as processing payments without the presence of an invoice), they can largely allow themselves to remain in the dark regarding most unethical acts that take place.

Though advantageous comparison was not as prominent as other mechanisms, it was still identified in the data gathered. According to Bandura (2016: 46), this mechanism takes place when individuals compare their actions to more harmful practices, thus diminishing the severity of their own actions. Such mechanism was identified in quotes such as:

> *Int1: What we do here is small. We are very small compared to other agencies. If something isn't in conformity, the impact of that is very little.*

Finally, the last MD mechanism identified through the data was euphemistic labeling. As Bandura (2016: 53) explains, "language shapes the perception of events and the thought patterns on which people base many of their actions". Thus, alternative language is used as a form of sanitizing actions. This was persistently identified in most interviews. If, when questioned, the word "corruption" was used, interviewees immediately denied the existence of any such practice at Agency X. If, when enquiring about such practices, alternative language was used such as "non-conforming" and "deviating from practice", then interviewees were more forthcoming. They themselves used language such as "wrong" or "not cool" to refer to such practices, but never the term "corrupt". The term corruption obviously carries with it a very negative connotation and is not an idea which any of them would want to associate themselves with. Hence, the use of euphemistic labeling which exempts them from self-condemnation.

6.5 Conclusion

This Chapter applied the theoretical frameworks of distributed cognition (Hutchins 1995) and moral disengagement (Bandura 1986) to the data gathered in an attempt to address the research questions proposed.

Distributed cognition (DCog) was applied by way of the DiCoT (distributed cognition for teamwork) methodological framework established by Furniss and Blandford (2006). In doing so, data collected through interviews, observations and notes were coded for DCog principles delineated by them (see Appendix II), thus building five different models: physical layout, artefacts, information flow, social structures, and evolutionary. These five models paint a picture of how cognitive processes are distributed amongst agents (technical and human) and give evidence as to the sources of information breakdown.

Moral disengagement was applied by firstly utilizing Moore et al.'s (2012) Moral Disengagement Measure so as to confirm the presence of such mechanisms at Agency X. Then, data was coded for the mechanisms proposed by Bandura (1986) in his theoretical framework: moral justification, advantageous comparison, euphemistic labeling, displacement of responsibility, diffusion of responsibility, minimizing harmful effects, attribution of blame and dehumanization. The data confirmed that individuals at Agency X do morally disengage in order to perpetuate acts of wrongdoing whilst exempting themselves from self-sanction and self-condemnation. The data gathered indicated in which ways such mechanisms support the breakdown of information. These findings will be discussed in the next Chapter.

CHAPTER 7
DISCUSSION

7.1 Introduction

The previous chapter sought to address the research questions proposed previously by applying the theoretical frameworks, defined in Chapter 3, to the unit of analysis under study here: the cognitive system at Agency X. The overarching research puzzle driving this thesis is to understand how information that is published on the Brazilian federal government's Transparency Portal is produced so as to identify why it has failed to curb corruption in Brazil.

In order to address the research questions proposed, a case study approach was adopted and data gathered (through interviews, observations, and documents) was analyzed through the lens of the theoretical frameworks proposed: Distributed Cognition (DCog) and Moral Disengagement (MD). In order to apply DCog in a structured and coherent manner, the DiCoT methodological framework delineated by Furniss and Blandford (2006) was used.

A second line of inquiry was established, seeking to understand wrongdoing and unethical-decision making and the impact of that on the quality of information produced. Thus, MD as a theoretical framework was proposed and data was analyzed in a two-stage manner. First, in order to confirm that MD mechanisms were at work at Agency X, Moore et al.'s (2012) Moral Disengagement Measure was applied, and data quantitatively measured. Second, with the intent of comprehending how MD was present and aided in unethical-decision making, data was qualitatively coded in accordance with guidelines established by Bandura (2006).

This present Chapter thus seeks to address the research questions proposed based on the findings presented in the previous Chapter. As such, this chapter is divided in the following

manner: section 7.2 will review how the unit of analysis functions as a distributed cognitive system in order to address the first research question that was proposed in Chapter 3. Section 7.3 will then present a discussion on the breakdowns to information identified within this cognitive system in order to address the second research question established in Chapter 3. Then, section 7.4 will review the moral disengagement mechanisms identified and discuss how these facilitate the breakdown of information (thus addressing the third research question previously proposed). Section 7.5 consists of a discussion of findings, and section 7.6 ends with some concluding remarks.

7.2 A Distributed Cognitive System

Based on the analysis of the data presented in the previous chapter, it is possible to establish that the procurement processes conducted at Agency X can be understood as a distributed cognitive system, in which tasks and procedures are distributed through people and artefacts within a physical environment. As Rogers and Ellis (1994: 123) explain, DCog "provides a theoretical and methodological framework for analyzing complex, socially distributed work activities of which a diversity of technological and other tools are an indispensable part". As an analytical approach, DCog provides a clear picture of how distributed components of the information system are coordinated.

In order to analyze this system through DCog, I opted to use the methodological approach delineated by Furniss and Blandford (2006) which they refer to as DiCoT. As per their framework, the data was coded for 22 different principles which are broken down into five models (see Appendix II): physical layout, artefacts, information flow, social structures, and evolutionary. The data gathered was coded both in a deductive way, using the DCog principles as a coding tool, and

in an inductive way to allow for the identification of any other meaningful themes. The result was the validation of all five models, with one of them, the social structures model, being extended to account for the breakdown of the two principles Furniss and Blandford (2006) had originally proposed, into six: goal tree and parity, hierarchy and high-level coordination, division of labor, distribution of knowledge, sequential control of action, and mediating structure. The extension of this particular model reflected the dominant lead individuals have in conducting the flow of information.

The mapping of all five models provided a clear picture of how this distributed cognitive system operates, and in which ways it is distributed amongst the various components that make it up. A brief summary of each will be reviewed here, so as to then unite them and discuss how this distributed cognitive system works.

7.2.1 Physical Layout Model

The physical layout analysis highlighted the open-floor environment at Agency X, which promotes greater exchange and communication between those that are integral towards pushing forward the information in this cognitive system. Moreover, it encourages dynamism and allows for a high degree of situation awareness and horizon of information. This means that all those involved in the procurement process and in producing information are privy to the exchanges and aware of the exchanges that place. The exception to this is the financial department, which is located on a separate floor, resulting into a reduced situation awareness and horizon of information. That translates into being mostly aware only of the information that is intentionally shared with them and being absent from most general and informal exchanges.

7.2.2 Artefact Model

Artefacts play an important role in propagating information through the system. The IntSys is the main technical artefact used in this regard. The initial request for a supply is made through this system, and from thereinafter, all stages of the process are registered on this system. However, IntSys presents a few technical constraints inherent to it, which means that it at times is considered an obstacle towards achieving the end-goal of completing the procurement process. Thus, IntSys serves the main purpose of registering steps of the procurement process, but it does not lead the process; it does not even have automatic reminders and triggers built into the system. Everything is therefore manually processed, and individuals have to keep going back into IntSys to register information, input data that is not automatically populated into it, and inform the system that the process has moved forward.

The other main mediating artefact is not a technical one, but a paper-based one: the physical file (PF). The PF serves the purpose of distributed memory, since it stores redundant pieces of information regarding the process – even beyond that which is registered on IntSys like, for example, copies of e-mails exchanged regarding the process between Agency X and suppliers. It is also the main coordinating resource, since it will be moved from one team to another as the process progresses, serving as both a behavioral trigger to act and a reminder of what still needs to be done. For the financial department also, the real trigger for them to act does not come through the technical system, but via paper (either the RoC at the reserve of cash stage or in the form of an invoice at the payment stage). These also serve the purpose of mediating contact between purchasing teams and financial department.

Another main technical artefact is SIAFI, which is managed by the financial department team. It is on SIAFI that the financial department will register the RoC and payment, information

which will then be fed into the Transparency Portal. Thus, SIAFI is the gateway between processes that take place at Agency X and the external community (i.e. civil society).

7.2.3 Information Flow

As discussed in the previous chapter, information moves and transforms through the system through the action of individuals. With the exception of information that is automatically fed from SIAFI to the Transparency Portal, nothing moves automatically without the direct involvement of a human agent. Thus, the main behavioral trigger within this system are the people themselves, who will notify the next team in the chain of tasks that the process has evolved via the delivery of the PF to them. Moreover, as identified in the previous chapter, the artefacts do not communicate with one another directly, relying instead on the individual to propagate the information through the various different media. What guarantees that information is continuously flowing through the system is the action of individuals. They are the ones who will input data into the IntSys and compile the PF, according to both their own interpretation of how procedures should be followed and according to the imbued properties of the systems (modularity), which will have been pre-established by those who designed these systems (external to Agency X).

The only time IntSys acts like a trigger is when the supply request is entered into the system, at which point the entire distributed cognitive system is prompted to, one by one, act. Communication bandwidth and informal communication play a significant role in this system. Informal communication takes place often, in part encouraged by the physical layout which encourages proximity and provides a high degree of situation awareness and horizon of observation, and partially due to the way the process has been structured. The way information propagates through it, means that, internally, communication bandwidth is the main form of

communication – again, the process only moves forward when an individual hand delivers the PF to the next team in charge. This results in the fact that some pertinent pieces of data to purchasing processes will not ever be formally registered.

7.2.4 Social Structures

This particular model had to be extended due to the importance of it in this information system. Drawing from DCog literature for codes, six new principles were identified: goal tree and parity, hierarchy and high level coordination, division of labor, knowledge of distribution, sequential control of action, and mediating structure. Extending Furniss and Blandford's (2006) DiCoT model to encompass new sources of evidence is not something new. In fact, they admit in their original paper that this was an underdeveloped model, omitting it altogether from research they later conducted with others (Berndt et al. 2014; Furniss et al. 2015). A later study (Rajkomar et al. 2015) even introduced a new model (the system activity model), attesting to the flexible nature of this methodological framework.

In this particular model, a few key features were identified: the first, and most important characteristic of this system, is the relevant role hierarchy plays. This was a theme that emerged often from the data; that is, the delegation of one's decision-making power to a higher authority (in this case, upper management). For the most part, individuals carried on their tasks and completed their goals which had been established previously. Division of labor was also clear to all, with each participant aware of what his/her role in the process entailed. This meant that tasks and procedures were sequentially constrained. However, if upper management intervened introducing changes to this system (be it by establishing new goals or disrupting work sequences), this order was followed by participants without question.

This characteristic also highlighted the importance of spoken language over written one, with internal discussions over changing and disrupting practices occurring in an informal way. These disruptions were therefore not formally registered and provided support for procedures to be broken.

7.2.5 Evolutionary Model

The mapping of this particular model provided evidence for the fact that the way things are done at Agency X, and the way in which tasks are carried out, are long-held traditions and resistant to change. Hierarchy and the way knowledge is distributed play a role in this since they are elements which reinforce this cultural element. Distribution of knowledge is in fact mostly contained within individuals. This means, that for new participants, they will be socialized into this system by observing and learning from others, not from written norms (which exist but are rarely referenced).

Another principle in this model refers to expert coupling, which indicates the degree to which user and system work in tandem. In the case of this particular system, the level of interaction is high between participant and IntSys.

7.2.6 Discussion

DiCoT is a structured methodological framework for studying information systems. Drawing from key DCog principles, DiCoT results in establishing five models, all interrelated, which help guide the researcher in identifying the context of interactions, the system's dynamics,

the part agents – both artefact and human – play in this system, and how information flows and transforms through this system.

As discussed, the relevant role social structures play in this information system led to an extension of this model, which was previously underdeveloped (Berndt et al. 2014). Table 7.1 presents a summary of these findings. Structuring data through these models also aids in identifying problems, or breakdowns in the information flow, as will be discussed in the sections that follow. Having reviewed the summary of findings for each of the DiCoT models established, it is possible to now address the first research question, which will be achieved in the next section.

Table 7.1 – Summary of Findings: DiCoT Models and DCog Principles Applied to Unit of Analysis

Model	Principle	Brief Explanation	Observations
Physical	Space and cognition	How physical layout supports (or fails to support) cognition.	Worktop space is taken up by a vast amount of paperwork which serves as a reminder of ongoing processes.
	Situation awareness	Refers to how accessible work of the team is, including proximity of others around them.	Open-office environment results in high level of proximity amongst members of the purchasing teams. Financial team is located on a separate floor.
	Horizon of observation	Refers to what can be seen or heard by a person.	High for those in the purchasing team. Low for the financial team which is located in a separate area.
	Arrangement of equipment	The physical layout of equipment.	Promotes dynamism and interaction due to where they are located, i.e. file cabinets agains walls reducing barriers and equipment (such as printer) in the center of the room.
Artefact	Mediating artefacts	Includes artefacts that are introduced in order to complete the task.	All artefacts serve as mediators in some way. Main ones: the IntSys and PF promote mediation amongst individuals. SIAFI is the mediating structure between the internal process at Agency X and the Transparency Portal.
	Creating scaffolding	External artefacts and environmental cues introduced to simplify cognitive tasks.	IntSys and PF provide scaffolding to support teams, both containing information that supports the procurement process, i.e. work progress and procurement stage.
	Representation - goal parity	Representation of the relationship between current state and goal state of the artefact.	Steps in the procurement process can often be skipped and conducted out of the technical artefact, meaning parity between goal and representation is low.

	Coordination of resources	Resources can be internally and externally coordinated to aid action and cognition.	PF and IntSys are the key coordinating resources. PF is the main coordinating artefact between purchasing teams, and IntSys integrates purchasing and financial team.
	Distributed Memory (*)	How information is redundantly collected and stored.	PF is the back-up memory to IntSys. Individuals are redundant records of information (beyond PF).
	Modularity (*)	Imbued "precomputational activities" and properties in artefacts.	IntSys and SIAFI possess innate properties established by developers (Ministry X, and Treasury, respectively), which constrain and shape the information inputted into them.
Information Flow	Information movement	How information moves around the system, e.g. artifacts, text, verbal, telephone, etc.	Information moves both through artefacts and individuals (face-to-face). Most interactions will not be formally registered.
	Information transformation	Transformation takes place when the representation of information changes.	Information transforms through the entire system as new events take place and new information is generated. The process is led by individuals.
	Information hubs	Where different information channels meet and different sources are processed together.	Observed in nearly all instances of the procurement process, most especially where IntSys and PF meet.
	Buffering	Refers to the arrival of new information that may interfere with ongoing activity.	IntSys acts as buffer throughout all stages of the purchasing process. It does not alert individuals of new processes or information, thereby stalling the process.
	Communication bandwidth	Face-to-face communication that takes place.	Most common type of information exchange due to the physical layout and role of certain artefacts (PF and paper) in moving the process along (i.e. they have to be physically handed over).
	Informal communication	Informal communication which represents an important function.	Often takes place due to close proximity between individuals (due to the physical layout) and social structures present which favor direct contact.
	Behavioral trigger factors	Trigger mechanisms that elicit behavior.	Different artefacts will trigger different responses. The main trigger is the people who will deliver PF themselves to the next team member in the chain of tasks, alerting them that the process has moved along.
Social	Goal Tree and Parity (*)	A clear and established main goal and sub-goals.	Roles and attributions are well-defined. Personal goals may diverge however from the main goal of the process (disparity). In other words, formal procedures are not always followed.
	Hierarchy and High Level Coordination (*)	Delegating power of decision.	A very well-defined power structure, which is strictly observed, and results in participants delegating their power of decision.
	Division of Labor (*)	Cognition of tasks and coordination.	Every individual is clear on what their role is in the process. Artefacts support that, acting as a register of actions undertaken.

	Distribution of Knowledge (*)	How knowledge is shared among individuals.	Knowledge is mostly contained in individuals. New team members will learn by observation, explanation or documents, but will mostly rely on their peers. (Informal environment).
	Sequential Control of Action (*)	The procedure is sequentially constrained if reliant on the completion of previous tasks.	True for procurement processes at Agency X but can be informally disabled if and when required (i.e. manager requests this).
	Mediating Structure (*)	How communication and social interactions take place (artefacts or language).	Spoken language is most common form, meaning that much of what is communicated regarding procurement processes will not be formally registered via an artefact.
Evolutionary	Cultural heritage	How processes established through time shape current behavior.	Certain cultural elements (i.e. hierarchy, informality, distribution of knowledge etc.) are long-held traditions and resistant to change.
	Expert coupling	The degree to which user and system work in tandem and are coupled.	Level of interaction between user and system is high. Individuals are integral to the functioning of the system, dictating how it works and evolves.

(*) New DCog principles introduced to these models.

7.2.6.1 How are cognitive processes distributed between agents (technical and human) at Agency X?

The first research question was motivated by the attempt to understand the roles played by both technical and human agents in the cognitively distributed system that is under analysis here. As discussed in Chapter 3, DCog establishes that cognition is not constrained to one individual mind (Clegg 1994; Hutchins 1995). Rather, as Clegg (1994: 467) explains, "aspects of cognition are also in the world, in social groupings and differentiated roles, in the human-designed artifacts and procedures and systems that people use, and also in the legacy of historical and cultural assumptions and ideas. And of course, this is exactly what organizations are designed for. Organizations are human designed systems for distributed agency, cognition and action".

Thus, in socio-technical systems, cognition will be distributed amongst both technical artefacts and human agents. As such, cognition is not restricted to one individual, but rather extended into the environment, where it is shared both with other individuals and artefacts, through

both internal and external representation. Both – artefacts and human agents – will work in tandem to produce information, motivating and constraining each other in a bi-directional manner, confirming Bandura's (1999; 2016) proposition of triadic co-determination, through which both the individual's construal of reality and the environment constantly reinforce one another. As he stresses in several of his papers, "the environment is not a monolithic entity" (Bandura 1999: 23). In that regard, their immediate context, i.e. the physical layout of their surroundings, will also play a role in shaping this distributed cognitive system. That is not to say however, that artefacts and individuals both play an equal part in the system and, in applying the DiCoT methodological framework to the data gathered, the intent was to understand what the role of each one was, how they interacted with one another, and how information was produced, transmitted, and transformed as a result of this interplay. In understanding this dynamic, the intent was to better comprehend how information is created and what the effect of this would be in how effective transparency is as an anti-corruption mechanism.

As discussed in both Chapters 3 and 6, through the DiCoT methodological approach, data was analyzed in a structured way and coded for the twenty-two DCog principles delineated by Furniss and Blandford (2006), which translated into five models: physical layout, artefact, information flow, social structure, and evolutionary. Data was then inductively coded again, which revealed further DCog principles not originally included in the DiCoT model. Through the unification of all five models, a clear picture of how the distributed cognitive system operates at Agency X thus became clear.

Firstly, information processing in this distributed cognitive system reveals itself through the propagation of representational state across the different media. The input of a purchase request into the IntSys triggers the entire system into action, and information will then be processed as it

moves through the entire cognitive system through the different media, i.e. the technical systems, other artefacts such as paper, and finally, through the people themselves. Analyzing how information moves through this system revealed the first and important characteristic: the fundamental role individuals play in the cognitive system.

As the data analyzed showed, though the information stored and registered in the technical system is constrained by its inherent design (modularity), it is ultimately up to the human agents to move the information forward and dictate what gets stored and how it gets stored into technical systems. Moreover, since technical artefacts do not communicate directly with one another, humans act as both hub and behavioral triggers in the sequential control of action.

The core of representational media is therefore between individuals, through language, revealing the high prevalence of communication bandwidth and informal communication that takes place at Agency X. This means that individuals act as mediating structures, communicating directly with one another, and bypassing technical systems, in addition to carrying the information forward across the different artefacts.

Non-technical artefacts (paper) also play an important role, acting both as a trigger and distributed memory. It is, therefore, the PF which, as it moves through the system will trigger the next team member to act, also functioning as a reminder that processes are still pending, not the IntSys. Paper, however, is a non-intelligent artefact. Alone, it accomplishes very little, thereby once again reinforcing the dominant role individuals play in the information system. Not only is it the human agents who have to physically move through the physical space of the work environment to move the PF to the next team member, but it is also human agents who determine what gets stored into the PF or not. Thus, human agents act as more than hubs and behavioral triggers; they are also the largest retainers of knowledge as well.

This strong human component of the system is the result of a few factors: first, the cultural heritage principle was strongly observed, i.e. long held-traditions, "how things have always been done". This element is very much present and very resistant to change. The fact that the distribution of knowledge is mostly done via observation and verbal communication only reinforces this cultural aspect. Written manuals and guidelines do exist and are stored on Agency X's intranet, but are largely ignored and the socialization of new participants will be accomplished in this informal way. This cultural heritage principle is manifested in how new technical systems (to support the new transparency legislation enacted in 2009 and 2011) were introduced: no formal training, learning was largely done via informal communication, procedures only changed to the extent that they had to, to accommodate the new systems' designs, but the mindset and the informal way of accomplishing things remained intact. In other words, the introduction of new technical systems only provoked changes to the cognitive system to the extent that they imposed on the system their inherent technical features forcing human agents to adapt to it. How information propagated through the system, however, remained intact, with human agents retaining most of the cognitive processes and leading the information flow.

A second factor which places the human component at the forefront of the cognitive system refers to the physical layout of Agency X. The open-floor plan observed and described in Chapter 6, encourages proximity between individuals, augmenting situation awareness and horizon of observation. This physical characteristic reinforces informal communication, thereby automatically selecting what information is registered and stored in technical systems (a sort of natural selection). Communication can, by the way, be intentional or not. As per the horizon of observation principle, the mere fact of being in the same room means you are in a position to overhear and see things that may be pertinent to how you conduct activities or to the activities of

others, whether you are actively participating in that specific exchange or not. This characteristic of the cognitive system further serves to enforce the cultural heritage principle, ensuring that all forms of behavior are replicated and perpetuated by all those exposed to it (whether positive or negative/illictit behavior). It also means that upper management, though they do not actively participate in all instances of the procurement processes, will still retain a high level of awareness of the activities that are being undertaken, whether they are actively involved or not.

The exception here are the agents who integrate the financial department and constitute an integral part to the sequential control of action but are physically removed from the rest of the procurement team since they are located on a separate floor. This means that their horizon of observation is low and their knowledge of the procurement processes will depend on what the purchasing department chooses to share with them, either verbally or through the information contained in the IntSys. They are however the ones who are responsible for registering information on SIAFI, the mediating artefact between the internal environment at Agency X, and the external environment via the Transparency Portal. SIAFI is limited in regards to the information that it stores, registering only two instances of the procurement process, RoC and payment. The financial department is however still subject to the same social structures, including hierarchy.

What this means is that it is not all human agents will be driving and controlling the information flow. The main leaders of cognitive processes are the purchasing team. Technical artefacts and the financial department personnel are supporters in this system, despite the fact that they are the communicators of transparency.

The strong presence of the hierarchy and high level coordination principles is the third factor in reinforcing how cognitive processes are distributed. Hierarchy is strictly observed, with individuals delegating total power of decision to a higher authority. This means that it is the upper

instances of the organization which will dictate how processes should be undertaken. As a result, though goal tree and parity are well established (and for the most part observed), and the sequential control of action is respected, upper management has the power to disrupt that, thus setting new goals and re-organizing the sequential control of action. The representational media through which this is communicated is language, i.e. informal communication. Disruptions to the goals and tasks will not be formally registered on artefacts, knowledge of which will be constrained to the human agents. Note that such disruptions tend to be the result of unethical-decision making as will be discussed in more detail in section 7.4.

Hierarchy is observed both within Agency X and outside it, with the upper ranks of Ministry X having the power to dictate what happens within that environment. The deployment of IntSys is an example of that. It took place in a centralized manner, dictated by instances superior to Agency X. Thus, the design of IntSys attends to what the upper ranks of Ministry X deem important, but not necessarily what participants at Agency X believe are. This characteristic is very important to this study since not only will hierarchy be one of the sources of information breakdown, but it will also be a facilitating factor in collective moral disengagement.

In summary, cognitive processes are unevenly distributed between technical and human agents. Human agents are the ones leading the information flow, determining how information is created and stored. The technical component enforces certain processing rules, dictating *how* information is registered on its systems (according to its imbued properties), but not *what* gets stored, or even *when*. This temporal aspect is one hundred percent controlled by participants since, as discussed in Chapter 6, information is not always registered on technical systems when processes happen, but at a later stage. The physical environment, on the other hand, acts as a

facilitator of this dynamic by enabling high horizon of information and situation awareness, which encourages informal communication.

This uneven distribution of cognitive processes between the components of the system implicates in several of the breakdowns that were observed. These breakdowns are the focus of the second research question that was proposed in Chapter 3, the details of which will be reviewed in the next section.

7.3 Potential Breakdowns

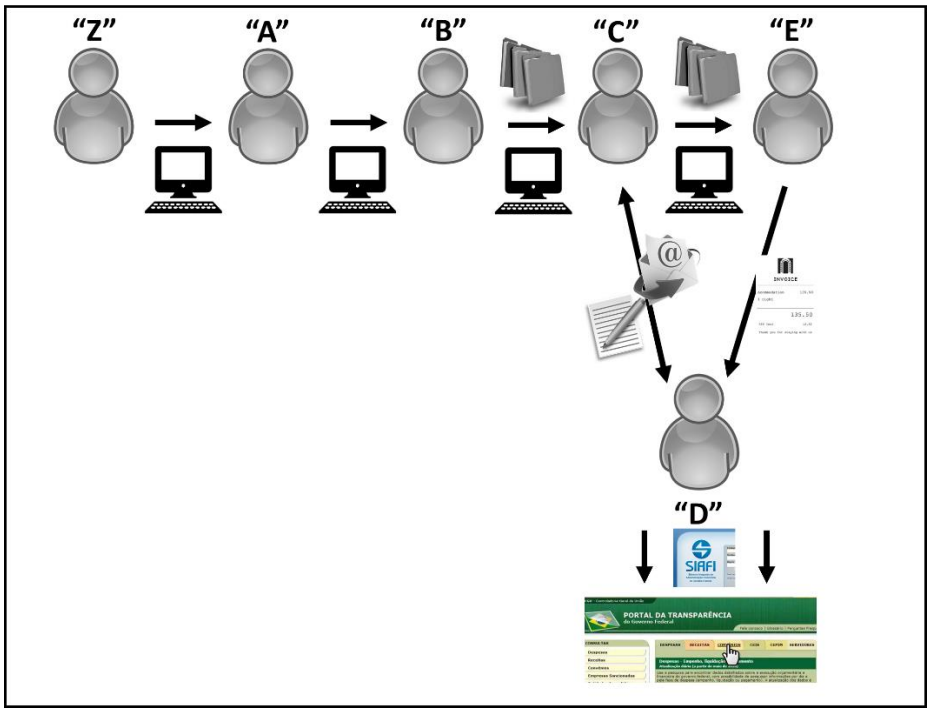
According to Sharp and Robinson (2006: 4), breakdowns are defined as "potential failures in communication or information flows that will impair the system's performance or prevent the system from achieving its goals". Breakdowns in the information flow have the ability to compromise the integrity of the data produced, hence why it became a point of interest in this study. In other words, corrupted data compromises transparency.

The identified goal for those who are a part of this system – the cognitive system at Agency X – is to meet the supply requirements of those with an identified need whilst observing formal procedures (i.e. legislative). As part of the process of meeting this goal, information is registered, propagated, and transformed throughout the system which comprises both human agents and artefacts, as previously reviewed. Breakdowns compromise the effectiveness of the system and in this section of the chapter, the sources of information breakdown will be identified, and the extent of the impact on the system will be discussed.

According to Galliers et al. (2007), the first step towards identifying whether breakdowns do, in fact, occur is to delineate how a system should work and from thereon identify what the

pitfalls are. What follows, therefore, is a brief summary of the information system at Agency X works. A visual representation of how information flows through this information system is depicted in Figure 7.1.

Figure 7.1 – Representation of Information Flows at Agency X



As discussed in the previous chapter, the procurement process is triggered when "Z" places a request on the IntSys (refer to Appendix VII for a step-by-step of the procurement process). Without any disruptions whatsoever, the process should take place in the following manner: the request placed by "Z" will be received by "A", who will redirect it (via the IntSys) to the team member responsible for dealing with that certain product category ("B").

"B" will be prompted to take action when the request is received through the IntSys. He/she will then investigate potential suppliers and contact those selected to request a quote. The

investigation process can be done by checking purchasing history registered in the IntSys, or by searching the Internet. There is no set of criteria for this. The suppliers selected will be sent an e-mail generated by the IntSys. Responses to those quote requests, on the other hand, will come via Outlook, to a team e-mail account. “B” then has the responsibility to check daily that e-mail account for responses and re-direct relevant e-mails to their own account. Once three quotes have been received, “B” will print these, compile them into a physical folder (PF), and hand off the process to team member “C”. “B” will also have to remember to register the process has been handed off on the IntSys.

For team member “C”, their responsibility is to select a supplier and confirm the purchase. In order to do so, “C” will type in the IntSys all of the information for the quotes “B” had received and placed in the PF. The IntSys will then generate a “comparative map” and assign a winning bid. In order to proceed with this request, “C” will then have to (1) obtain their manager’s approval through the IntSys, and (2) request that the financial department allocate the budget for this purchase. This will be done by filling out a Reserve of Cash (RoC) form on MS Word and physically taking this to the financial department team (“D”).

Upon receipt of the RoC, “D” will check on IntSys the details of this purchase and confirm on SIAFI that cash has been reserved. SIAFI will register this information automatically on the Transparency Portal.

“D” will then print the RoC confirmation that SIAFI has generated, scan it, and send it back to “C” via e-mail. The e-mail will be sent to the entire department in bulk (several RoCs at the same time), and “C” must check these e-mails to ensure that their particular purchase order is included. “C” will then register on IntSys that purchase has been approved and will e-mail the

supplier with the winning bid with instructions. Once the supplier has acknowledged the request, "C" will mark this on IntSys and will take the PF to "E", who will take over the process from there.

The responsibility for "E" is to finalize the process so that it can be sent back to the financial department for payment. Thus, "E" will expect to receive an invoice from the supplier and will also send "Z" delivery instructions of the supplies ordered. Once the invoice has been received and "Z" has confirmed that everything has been delivered, "E" will then place a copy of the invoice in the PF. This will be stored, marking the end of the process for the purchasing team. The original copy will be taken to the financial department ("D"). "D" will check on IntSys details of this order and will approve payment, formally registering this information on SIAFI, which will register this also on the Transparency Portal. The invoice will be filed away, marking the end of the process.

Having established how the information system should work, the next step is to identify where and how breakdowns occur. This was achieved through the analysis of the data collected, coding it for DCog principles, and structuring it into the five DiCoT models. The breakdowns identified can be classified into three categories: artefact breakdown, non-intentional human breakdown, and intentional human breakdown. These are summarized in Table 7.2 and will be individually listed and discussed in subsequent sections of this chapter.

Table 7.2 – Summary of Breakdowns

Artefacts	Non-Intentional Human	Intentional Human
1. IntSys does not automatically redirect requests to the correct team member due to a system error (Step II of the procurement process).	1. Participant must register on IntSys when a process progresses to the next stage in the procurement process (e.g. Steps X an XVIII). Individuals reported that they sometimes forget.	1. A fake purchase need may be created. As a result, information on the technical system is faulty. Source of breakdown will typically be "Z", but will involve the cooperation of others.
2. IntSys built-in search engine is limited and often fails (Step V of the procurement process).	2. E-mails received from suppliers through team e-mail account will sometimes be overlooked, leading to the halt of a process (Step VII of the procurement process).	2. Quotes inputted into IntSys will be done in a way to favor a specific supplier. As a result, information in the system does not, in fact, reflect reality. Source of breakdown may be either "Z", "B", or "C", or upper management. If not "B" or "C", their collaboration will be required anyway.
3. IntSys crashes result in team member "B" having to send a request for quotes by e-mail and not via IntSys (Step VII of the procurement process).	3. Quote information must be inputted manually, which can result in mistakes (Step XVII of the procurement process).	3. A certain supplier may be favored under the false pretense that it falls into legislative exemptions for the bidding process. The result will be false information. The source will be either "Z" or upper management and will require the collaboration of others ("B", "C", and "D").
4. IntSys has no alert mechanisms, resulting in participants having to periodically check for new information.	4. RoCs are sent to the entire team in bulk via e-mail. Participants will sometimes not identify that their process has been included, resulting in process halt (Step XXIV).	4. Document alteration to conceal irregular requests, such as an invoice that does not contain within it the exact nature of the purchase. Information entered on SIAFI will not, therefore, match reality. Source of breakdown may be "Z" or upper management and will require the collaboration of others.
	5. Requester "Z" must confirm delivery receipt before payment can be processed. When "Z" fails, suppliers may complain that they have not been paid.	5. Conducting a process "out of the system", only to later go back and register it on the IntSys as if it had occurred at that later stage. Information entered on the technical artefact does therefore not correspond to reality. Source of breakdown will typically be upper management but will require the collaboration of others.

7.3.1 Artefact Breakdown

The first category of breakdowns identified refers to when artefacts cause the breakdown in the information flow. A few instances were identified:

1. In Step II of the procurement process (refer to Appendix XII for step-by-step), "A" must redirect requests to the appropriate team member. This stage in the process is because of a technical systems' breakdown. IntSys should be able to automatically identify the relevant team member, thus eliminating this step altogether. However, IntSys only recognizes a former worker, someone who left Agency X quite some time ago (according to the data gathered, this individual had left five years prior to the interview taking place). In spite of repeated requests to have this corrected it had not, which created the need to have a dedicated person to check the IntSys on a daily basis and re-direct requests. If this person is therefore not present to perform this procedure, requests will accumulate and not be tended to, thus creating a bottleneck.
2. In Step V of the procurement process, "B" can either search for suppliers via the IntSys or on the Internet. Participants, however, reported that IntSys's search mechanism fails and often the information they require is hard to find. Since Google is a much easier search engine to manage, it becomes easier to just resort to that, meaning that this search for suppliers goes unregistered. The impact of this has been that buyers now have no norm or criteria to follow and can choose suppliers based on their own personal set of criteria.
3. In Step VII of the procurement process, "B" must contact suppliers requesting for a quote via IntSys so that this step is registered on it. In reality, IntSys often crashes and this mechanism rarely works. The result is that these requests for quotes are sent out of

IntSys, via e-mail. The e-mails will then later be stored on the PF, but it is up to the buyer what he/she stores in the PF with no possible oversight mechanism, something that would only have been possible had the process been carried out through the IntSys.

4. IntSys has no alert mechanisms, meaning that it is up to participants to check IntSys periodically to ensure that no new information has been inserted there. For example, if a request is urgent and time has lapsed on it, the IntSys will not advise the buyer of this information. Thus, a process can lie there overdue and unchecked indefinitely. This will only be corrected when the buyer checks IntSys or somebody calls asking for an update (requester "Z" or a manager).

Four sources of artefacts' breakdowns were identified as listed above. They are all in reference to IntSys. No breakdown was identified for any of the other artefacts.

7.3.2 Non-Intentional Human Breakdown

Non-intentional human breakdowns were identified as those instances in which a human agent was the source of the breakdown, but in an unintentional way. These were identified as:

1. In several instances throughout the procurement process, it is up to the individual participant to register on the IntSys that a step has been completed and that it has progressed (such as Steps X and XVIII in the procurement process. Refer to Appendix VII). However, it emerged from the interview data that sometimes individuals forget to do this. The result is that the IntSys will show that a processis still under the care of a certain individual, when in fact, it has already moved on. This is in part due to the

fact that, from an individual's perspective, the true marker that the process has moved to the next person, is the fact that the PF will have been physically handed off.

2. In Step VII of the procurement process, e-mails from suppliers are received through the team's e-mail inbox. This means that participants have to keep checking that inbox to ensure that no new information has been received. Due to the large number of quotes received (since it is a shared inbox), sometimes e-mails can be overlooked and a process will stagnate. In addition, if a participant goes away on annual leave, then it will be up to the person that is covering him/her to retrieve these messages. If that person is unfamiliar with the process and the suppliers who had been contacted, these messages may sit in the inbox indefinitely.
3. In Step XVII, it is up to team member "C" to input quote data into IntSys, one by one. Based on the data gathered, since quotes contain many pieces of information, mistakes will sometimes be made and the data registered will not be accurate. As a result, the "comparative map" that IntSys generates to award a winning bid will be based on faulty information.
4. In Step XXIV of the procurement process, RoCs are sent to the entire department in bulk (in other words, several at a time). This means that sometimes individuals will overlook their processes and fail to identify that the RoC will have already been approved. The result will be a delay in processing the order.
5. In Step XXXIII, "Z" has to confirm delivery in order for team member "E" to proceed with payment. If "Z" fails to do this (as sometimes does happen), then the process will not be finalized on IntSys and payment will not be processed. The result is that suppliers will then start to complain and inquire as to why they had not yet received payment.

Breakdowns in this instance typically occur due to the technical system's limitations (not automatically populating certain fields and requiring this to be completed manually instead), and how procedures have been built (over-reliance on paper and e-mails).

7.3.3 Intentional Human Breakdown

Sometimes breakdowns occur due to an intentional action on the part of the human agent. These instances have been identified as:

1. A fake need may be created, which will result in a series of fabricated information being registered and stored. An example is that of the double contract, discussed in the previous chapter. Two contracts with the same supplier, for the same product category, were signed, with only slightly different terms. Both carried a minimum order amount that had to be paid yearly, meaning that whether Agency X requested that amount or not, the payment would still need to be made. The source of this breakdown would typically be "Z", though would require cooperation by other participants of the procurement process.
2. A certain supplier may be intentionally favored over others, meaning that the information registered on the information system does not correspond to reality. Since it is up to the buyer whom and how to request quotes from, with no formal procedure in place, the request will retain the appearance of a regular bidding process on the technical system, when in reality it is not. The source of this breakdown may be either "Z", who placed the request, or a member of upper management. The involvement of

"B" or "C" typically came at the direction of others. I found no evidence that they had personally benefitted from this (though this possibility cannot be fully discarded).

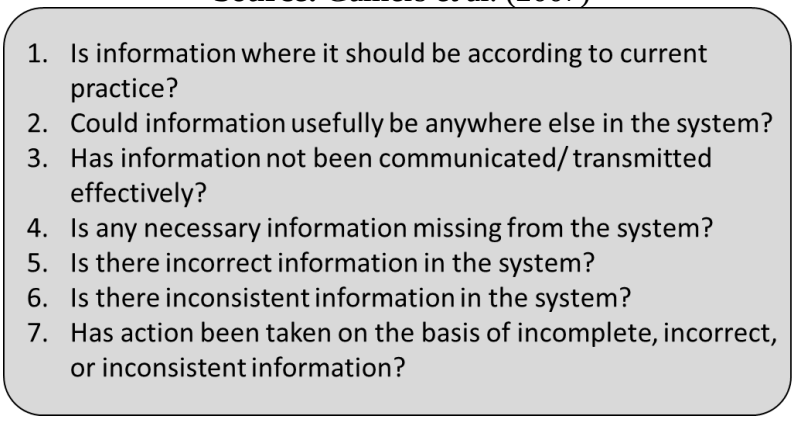
3. A certain supplier may be intentionally favored over others, but under the false pretense that it falls into certain legislative exceptions for bidding processes (see Appendix VI for exact legislation). Whatever winning bid IntSys then appoints (Steps XIV and XV in the procurement process) can be overridden. The source of this breakdown may be either "Z" or upper management. This would require the collaboration of other team members too ("B", "C", and possibly "D").
4. Changing documents to conceal irregular requests. An example of this is the invoice that was altered to conceal the exact contents of the purchase. The actual invoice is not registered on the technical artefacts, only on paper, with only certain pieces of information regarding the invoice being formally registered on SIAFI. Thus, such inconsistency or lack of information would not be easily identified, most especially by an external audience. Based on the data gathered, the source of this breakdown was both requester "Z" and upper management, but would also require the cooperation of others.
5. Skipping steps in the procurement process in the name of speediness or to favor certain suppliers, such as payment without an invoice. The process is then conducted "out of the system" (as described in interviews), and only later registered, after completed. This means that the information on the system will not correspond to reality. An entire process can be handled extra-officially, according to those interviewed. The source of this breakdown will typically be upper management, but would require the collaboration of all those involved in the process.

The instances identified above can be largely attributed to unethical-decision making. Moreover, although the source of that decision-making will typically be a member of upper management (or high-ranking individual, even in the case of "Z"), carrying out such actions will require the collaboration of several individuals, most of whom will not profit from such actions themselves.

7.3.4 Checklist Analysis

There are no previous studies which have applied DCog to a similar setting, and therefore no basis for comparison in terms of the findings obtained. Thus, to confirm breakdowns have been correctly identified, Galliers et al. (2007)'s checklist analysis has been used here. It consists of seven questions that should be addressed (see Figure 7.2) in order to ensure that all points of breakdown have been identified. This section will, therefore, address this checklist.

Figure 7.2 – Checklist Analysis
Source: Galliers et al. (2007)



One of the questions posed by Galliers et al. (2007) refers to whether information should be in the system according to current practice or whether it could be anywhere else. Based on the discussion in the previous section, though information tends to be stored where it should be in accordance with procedures in place, this does not necessarily mean that it is the optimal way of accomplishing things. As reviewed, participants are limited by the technical systems' designs in terms of what can effectively be inputted into it. Thus, there are pieces of information which will only be stored in the PF, but not on the IntSys, which is more easily open to scrutiny and oversight. Likewise, SIAFI also does not store within it the entire procurement process, only two instances of it, RoC and payment. Thus, these are the only two instances of a process comprised of thirty-nine steps, that is communicated to the Transparency Portal and which will be open to scrutiny from civil society (the "public access" phase of transparency).

The fact that information in the PF is not effectively open to scrutiny or monitoring, leads to the third and fourth questions in Galliers et al.'s (2007) checklist: has information not been communicated/transmitted effectively, and is any necessary information missing from the system. From the standpoint of a procedural analysis only, it can be assumed that the information that is not inputted into the system will not jeopardize the process itself; in other words, it can still be concluded and supply needs will still be met. As discussed previously, an entire procurement process can take place outside of the technical system and will still be concluded. Thus, IntSys is not fundamental to the process. However, these technical artefacts were officially put in place to attend to legislature demands, i.e. increased transparency, in accordance with laws enacted in 2009 and 2010 (see Chapter 5 for a full discussion). From this standpoint, the one of monitoring and oversight, any information that is not inputted into the system greatly jeopardizes that possibility.

This leads to Galliers et al.'s (2007) fifth question, which refers to whether incorrect information has been stored in the system. As the data gathered shows, the answer to that question is unfortunately positive. This, however, can be due to both unintentional as well as intentional actions, as presented in the previous section of this chapter. If due to an unintentional error, this will have been the result of information has had to be inputted manually into the system, as opposed to it being automatically populated (in the instance of quote information, for example). It can also be the result of an intentional action. As discussed in previous sections of both this chapter and the previous one, information is subject to manipulation. Such is the case regarding the invoice whereby information was intentionally omitted so as to conceal the true nature of the purchase made. The incorrect information will, however, be placed into the system giving the process the auspices of having taken place in accordance with procedures.

The sixth question in Galliers et al.'s (2007) checklist is similar to the fifth one, asking whether any inconsistent information had been placed in the system. As with the fifth question, the answer is yes. Reality does not always conform to what is portrayed in the system such as, for instance, in the case of suppliers that have already been pre-selected. Though in the system it will appear as if procedure had been followed with the three quotes being registered, in reality, the procedure would have been circumvented. Since the selection of quotes is up to the buyer, not necessarily the best quotes will be registered on the IntSys, leading IntSys to pick a winning bid based on a false premise and faulty information.

The final question in Galliers et al.'s (2007) list refers to whether action has been taken on the basis of incorrect information. The answer is once again, yes. Internally, regarding solely the procurement process, purchase requests will be completed and payment remitted based on the information that was initially fed into the system. Externally, from a transparency standpoint, civil

society can only act upon information which is stored and displayed on the Transparency Portal. If the information that is publicized there appears to be correct, then there is no wrongdoing to act upon or contest.

And information on the Transparency Portal will indeed appear to be correct because of two fundamental reasons: (1) as has already been discussed, the Transparency Portal does not capture the entire procurement process, only two distinct stages of it, RoC and payment, which are registered on SIAFI. Moreover, recall that there is no integration between SIAFI and IntSys, meaning that the mediating structure between both systems are the individuals. (2) The manipulation of information will have taken place in the pockets of informality of the procurement process. As established in the previous chapter, the way in which the procurement process has been structured (the PF is a main mediating artefact) and layout of Agency X not only allows but encourages a high level of communication bandwidth (face-to-face communication) and informal exchange. Thus, even if civil society did have an insight into the entire process, the way IntSys is designed to capture information allows for the process to be corrupted and appear as if it were in accordance with legislation, when in fact it was not.

It stands to reason that the aim of the Transparency Portal is to provide scrutiny to global amounts spent (i.e. is budget execution within limits), but not to scrutinize specific elements, nor the exact nature of expenditure, which leads to the question of how transparent is, in fact, the system.

7.3.5 Discussion

This information system is subject to various breakdowns, categorized above in instances of artefact, non-intentional human, and intentional human breakdowns. Having identified the sources of breakdowns to the information flow, it is now possible to address the second research question established in Chapter 3, which will be done in the next section.

7.3.5.1 How do breakdowns impact the cognitive system?

As presented in this chapter, breakdowns are defined as failures to the information flow (Sharp and Robinson 2006) and can impact the information system in several ways. The first step towards measuring the impact was identifying the ways in which breakdowns occurred and what the sources of those were. In order to do so, Galliers et al. (2007) suggest that a map be established of how the information system should work under optimal conditions and then based on that identify the pitfalls and error points.

In order to achieve that, I relied on the information obtained as a result of analytically decomposing the procurement process, as established by the theoretical framework, DCog, adopted (see Figure 6.1 in Chapter 6 for a visual map, and Appendix VII for a detailed step-by-step), and then, based on the DiCoT models delineated as a result of the data analysis, it was possible to identify what the problem-areas were.

As a result, three categories of breakdowns were identified: those caused due to shortcomings and failures of artefacts; those caused due to an unintentional action by human

agents; and those breakdowns that were intentionally caused by human agents (please refer to Table 7.2 for an overview).

The breakdowns that take place as a result of failures of artefacts were found to have a more limited and contained impact than those caused by human agents in terms of the quality of information that is produced. These breakdowns were all caused by limitations and the inherent design flaws of the IntSys. The impact of these mostly referred to procedures being delayed and/or the creation of bottlenecks. It meant additional work for human agents, who often expressed their frustration with it, describing it as inefficient. Another felt impact was that certain pieces of information were not registered on the system due to it crashing, such as outgoing requests for quotes to suppliers, which should go through the IntSys, but ended up more often than not being carried out by e-mail. A more perverse impact of these breakdowns, however, was the opportunity it gave individuals to proceed with processes outside of the technical system, using its inefficiency as a source of moral disengagement. Moreover, such instances compromised the quality of the information being produced.

Regarding non-intentional human breakdowns, these referred to unintentional actions which impacted the information system in different ways. The most concerning of such breakdowns referred to those which compromised the integrity of the information being stored in the IntSys, such as, for example, not registering on it when a stage in the procurement process had been completed or inputting incorrect information into it. In both these cases, the IntSys itself was partly to blame for the breakdown. Due to technical design failures, the IntSys is unable to automatically populate certain fields of information (such as quotes) nor does it automatically register when processes have evolved to the next team, relying solely on the actions of participants (further corroborating what was discussed in the previous section as to the dominant role

individuals play in propagating information through this system). An important aspect regarding this type of breakdown is that it usually occurred due to the sole action of a single individual. In the case of intentional human breakdowns, however, these were usually due to a concerted group action.

Intentional human breakdowns were defined as precisely that: the intentional action of human agents. In other words, individuals had an intent to purposefully compromise the integrity of the system. Hence, the reason for such breakdowns was mostly due to unethical decision-making on behalf of individuals. The impact was that compromised and incorrect information was stored in the technical system, which did not portray reality.

An important aspect concerns the source of such breakdowns, which, as gathered from the data collected and analyzed, was more often than not, a member of the upper levels of the hierarchy. As discussed extensively already, power structures are a strong feature of this work environment, not only within Agency X but also outside of it, throughout Ministry X. What this means for this type of breakdown is that it went uncontested and all individuals involved in a specific purchase process collaborated in inputting the wrong information in the technical system. Such information would later be registered on SIAFI and, in turn, on the Transparency Portal.

The impact for all three types of breakdown can be split into two categories: they either delay processes or compromise the integrity of the information stored in the technical system. In other words, incorrect information is being stored in the technical system and then later reported on the Transparency Portal. This obviously limits the effectiveness of transparency. Of interest here are the cognitive mechanisms which support such information breakdowns, i.e. moral disengagement. This will be addressed as part of the third research question proposed in Chapter 3.

Moral disengagement and how such mechanisms facilitated the breakdowns identified will be reviewed in the next section of this chapter.

7.4 Moral Disengagement

As discussed in the previous Chapter, collective moral disengagement is present within Agency X, as measured by Moore et al.'s (2012) Moral Disengagement Measure, and then further corroborated by the qualitative data gathered and then coded in accordance with Bandura's (2006) guidelines and coding procedures. The results indicated not only a propensity to morally disengage by individuals at Agency X but that this, in fact, did occur through various guises. Table 7.3 summarizes the main findings.

Table 7.3 – Sources of Moral Disengagement

Moral Justification	Displacement of Responsibility	Diffusion of Responsibility	Euphemistic Labelling	Advantageous Comparison
1. Technical systems are inefficient (*modularity*) 2. Procedures are counter-productive. 3. The formal process takes too long. 4. Rules need to be broken to address supply needs faster. 5. Money needs to be spent to guarantee a budget for the following fiscal year.	1. Upper management dictate rules (*hierarchy*) 2. Orders must be followed (*hierarchy*)	1. Long-held traditions, "the way things have always been done" (*cultural heritage*) 2. Willfully ignoring what others do (Low *horizon of observation*)	Use of alternative labels for corruption, such as: wrong, non-conforming, break of procedure, a favor	1. Size of organization (smaller than other entities within the Brazilian federal government). 2. Monetary, i.e. funds diverted are smaller than in other agencies (such as Petrobrás).

As discussed in Chapter 3, moral disengagement refers to how individuals engage in morally reprehensible acts in a manner that deactivates self-regulatory processes that habitually govern moral behavior. It refers to individuals reframing their own actions in order to downplay the ethical content of their actions. As Bandura et al. (1996: 365) affirm, "people do not ordinarily engage in reprehensible conduct until they have justified to themselves the rightness of their actions. What is culpable can be made righteous through cognitive reconstrual".

Rooted in social cognitive psychology, Bandura (1999; 2016) highlights in several instances the "selective" quality to MD. In other words, individuals tend to adopt different standards of morality depending on their context. Thus, an individual who is morally disengaged within their work environment might be an upstanding citizen in other areas of their life, such as a faithful spouse, a charitable citizen etc. In accordance with Bandura's (1999) triadic reciprocal causation model, what sets the standard for whether an individual will morally disengage or not is the context within which they are embedded.

As discussed previously, people are essentially social beings. Thus, the opinion of others matter, be it their peers or a superior. Not conforming to their social environment means running the risk of being shamed, embarrassed or ostracized, which, as Warren and Smith (2008) observe, causes feelings of distress. Moreover, as Bandura (2016) adds, individuals value being positively viewed by those whose opinions they care about, such as a manager or a colleague. Thus, MD allows individuals to, when confronted with evidence that would challenge their positive self-view, "question its credibility, dismiss its relevance, or twist it to fit their views" (Bandura 1991: 95).

The effect of such cognitive mechanisms is the perpetuation of morally reprehensible acts, which in the case of Agency X, translates into unethical decision-making and wrongdoing. The

moral disengagement theory establishes eight mechanisms through which individuals will strive to self-justify their actions. Five of these mechanisms were observed at Agency X, as listed in Table 7.3. The ways in which individuals morally disengaged varied. However, the first three mechanisms listed in Table 7.3 were certainly the most prevalent, as could be attested by the data gathered.

As discussed, hierarchy was a strong feature present in this organization and, as data demonstrates, also one of most common forms of moral disengagement (displacement of authority). The power structure at Agency X thus facilitated corruption, with individuals delegating their power of decision to a higher authority and using this as a way of evading self-condemnation and any negative feelings that could arise as a result of collaborating in such actions. This is consistent with findings by Moore et al. (2012) and White et al. (2009) who studied unethical decision-making in organizational settings.

In fact, several studies have stressed the effect unethical leadership has on driving unethical behavior amongst subordinates in organizations (Brown et al. 2005; Brown and Treviño 2006; Moore 2008; Brown and Mitchel 2010). To this extent, Moore et al. (2018: 1) affirm that "leadership is often singled out as a critical driver of both ethical and unethical behavior inside organizations". Though these studies have been in the area of organizations, results here suggest that these same mechanisms are reflected within governmental institutions. Obviously, results obtained in this study cannot be generalized due to the single case approach that was adopted, however, the consistency of similar findings in other disparate settings (private corporations in countries with different cultural contexts) suggest that this specific finding is not restricted to this particular setting.

Reinforcing this finding, Bandura (2016: 35) affirms that "individuals who believe they are simply powerless cogs in a system feel no responsibility for their actions, whereas those who believe they have some influence over what they do hold themselves at least partially accountable". This characterization of accountability emerged from the data, as individuals, by practicing proxy agency, handed over their power of decision to their managers and also any sense of accountability, allowing themselves to feel exempt from morally-reprehensible actions undertaken. This is significant since these are structures that remained intact even in the face of the deployment of technology which, officially, had the objective of curbing corrupt practices and enhancing levels of *personal* accountability. However, even with the implementation of new technical systems, personal accountability remained firmly shifted to a proxy, i.e. their managers.

The strong social structures present at Agency X also manifested themselves as a form of moral disengagement, through the diffusion of responsibility mechanism. This is also consistent with findings by White et al. (2009: 43), who explain "people do not operate as autonomous moral agents, impervious to the social forces operating within the corporate system in which they are enmeshed. Collective moral disengagement at the social system level requires a network of participants". This feature, of a network of willing participants, was also observed at Agency X, whereby an entire team cooperated and supported acts of wrongdoing, whether they directly benefitted from it or not.

Thus, corruption does not manifest itself as the result of the actions of one single individual. Rather, it requires that all those present collaborate somehow, be it in the form of inputting incorrect data into the information system or ignoring what took place around them allowing it to perpetuate. As stressed in the previous section, intentional human breakdowns are often the result of a team effort since, at all stages of the procurement process, information will have to be

distorted. This finding reinforces the notion that people are not impervious to their social settings, adopting certain codes of conduct to fit into that particular environment. It is also consistent with the results of corruption in organizational settings (Anand et al. 2005; Treviño et al. 2006; Pinto et al. 2008). To this extent, Ashforth and Mael (1989) observe that individuals develop social identities in accordance with the different social groups they are inserted in and the different social roles they play.

The only issue with these studies is the lack of acknowledgement regarding the fact that not all of those who partake in the process of unethical decision-making directly benefit from it. In the case of Pinto et al.'s (2008) research, for example, they refer to only two classes of individuals: those who engage in corruption and benefit directly from it, and those that engage in corruption to benefit their company. For most of the human agents who are integral to the cognitive system under analysis, they neither directly benefit from it, nor are they doing it to benefit their organization, i.e. the government. Quite the contrary, public funds are being abused. However, these individuals still facilitate the process and collaborate with it.

Important also to note the principles which allow such social structure to perpetuate: firstly, cultural heritage reinforces the historical aspect of this cognitive system, aiding in the belief that procedures should be followed in a certain way since that is the way it has traditionally been done. Secondly, distribution of knowledge is a facilitator since it is largely contained within the human component of this cognitive system. Thus, the representational media between individuals is language, meaning that procedures and norms are largely communicated in an informal manner and face-to-face. As already discussed, written norms do exist but they are largely ignored in favor of consulting with other individuals.

Another mechanism commonly used was moral justification which often came in the form of blaming technical systems' perceived flaws and inefficiencies. As discussed in Chapter 6, failings are real. So much so, that an additional stage in the procurement process was inserted into it in order to accommodate such failings and a specific person ("A") was designated solely for this purpose (IntSys's inability to direct requests itself to the appropriate team member). However, the act of blaming the artefact to justify wrongdoing is, in fact, moral justification. For example, choosing suppliers according to personal interest because the IntSys's search engine is faulty. It seems therefore reasonable to infer that whether the technical system responded to the needs or not, individuals would continue to blame it; it had already become an ingrained form of justifying actions that would otherwise be considered morally reprehensible. In that regard, the technical artefact itself became the source of moral disengagement, thus facilitating unethical decision-making. In other words, the technical system which had been designed to curb corruption, created pockets of opportunities for the social system to behave unethically.

In this regard, the use of euphemistic language also aided in this process. Alternative language has the impact of "sanitizing" actions and making them seem benign. As discussed in Chapter 6, individuals never described the practices that took place at Agency X as "corrupt", instead using alternative terms to describe such actions, such as "wrong", "non-conforming", "a favor", words that are imbued with meanings more tolerable than "corrupt". The use of such a mechanism has the ability to "normalize" a situation and make individuals more at ease to be engaging in it. It minimizes self-condemnation and feelings of distress that would have resulted had individuals objectively viewed their actions as corrupt.

In summary, findings here confirmed the presence of moral disengagement mechanisms within Agency X and its use to support and facilitate unethical decision-making. Through the disengagement of their moral codes, individuals are able to minimize feelings of self-condemnation and support the wrongdoing that takes place within that environment, whether they benefit directly from it or not. Through moral disengagement, individuals confer their agency to a proxy, exempting themselves from culpability, and granting their power of decision, and thus personal accountability, to another instance, be it their manager or the social system in which they are enmeshed. This results for individuals in the belief that their actions are acceptable, and that no unethical decision-making or wrongdoing takes place in that environment (as reflected by the answers obtained to the question of whether corruption took place at Agency X or not, and 90% of respondents categorically denying it).

Moreover, the themes that emerged here matched the ones that had emerged as a result of the DCog data analysis. Equivalent themes were found in both sets of analyses: what under MD is identified as displacement of responsibility and diffusion of responsibility, finds its equivalency in DCog principles under the social structure DiCoT model. This thus reinforces the validity of findings and analysis results.

7.4.1 Discussion

Having already discussed how the cognitive system under analysis is distributed, how breakdowns occur, and how moral disengagement mechanisms manifest themselves, it is thus necessary to address the third research question proposed, which will be done in the next section.

7.4.1.1 How do moral disengagement mechanisms facilitate the breakdown of cognitive systems?

The third research question was motivated by the attempt to comprehend whether moral disengagement mechanisms had facilitated the breakdowns identified in previous sections of this Chapter. As discussed previously, the sources of breakdown to the information system under study were classified into three categories: artefact, non-intentional human, and intentional human. In the case of artefact and non-intentional human breakdowns, moral disengagement played no part. This because such breakdowns were either the result of imbued technical design flaws that technical artefacts present (as discussed in previous sections at length), or the lack of intent in causing a breakdown by the individuals (mostly due to the way the procurement process is delineated and IntSys's design failings).

In the case of intentional human types of breakdown, these were found to be the result of unethical-decision making, since they were caused due to the direct intent of compromising the cognitive system. Moreover, intentional breakdowns were facilitated by collective action. In other words, the intent to distort information required a team effort. It involved almost everyone in the task sequence, at the very least "B" and "C" (please refer to Appendix VII for a step-by step of the procurement process), but possibly "Z" and "D" and, at times even "E". Yet, in spite of this collaborative effort, only a handful benefitted from a particular activity. As identified, members of upper management were the main beneficiaries, rarely it being a low-ranking civil servant (the only exception identified was the individual who used their own company to supply catering services to Agency X; see Chapter 6).

Thus, two principles discussed previously played a significant role in facilitating such breakdowns: hierarchy and the immediate social context, both of which were often found to be used as a form to morally disengage (in the form of displacement of responsibility and diffusion of responsibility, respectively). Thus, it is possible to affirm that moral disengagement played a significant role in facilitating such actions since it is by disengaging that individuals allow themselves to partake in activities which would have otherwise caused them discomfort, that is, breaking their personal moral codes.

As Bandura (2016: 10) affirms, "people do not operate as autonomous moral agents, impervious to the social realities in which they are enmeshed". As such, through the daily interactions and gradual socialization, individuals are gradually habituated into this form of local culture. As reviewed, social structures at Agency X were found to be the result of long-held traditions, resistant to change (*cultural heritage*). Personal conduct expectations will have been established as a result of that. In this regard, Bandura (2016: 27) further explains that "moral mandates are often overridden by emotions, enticing incentives, and coercive social pressures". Thus, individuals will feel social pressure to conform to these locally established norms, gradually disengaging their own personal moral self-regulatory processes, and freeing themselves from any feeling of self-condemnation or self-sanction.

As a result, the action of morally disengaging allows individuals to partake in acts of wrongdoing. The fact that individuals are so heavily influenced by their immediate contexts and hierarchy also emerged through the analysis of data through DCog, thus confirming the validity of these findings. In terms of information breakdown, these actions compromise the integrity of the data stored and propagated through this information system. Thus, it is possible to affirm that MD

mechanisms facilitate the unethical intent to distort information in instances of intentional human breakdown.

It is, however, important to note that though morally disengaging facilitates wrongdoing within a certain environment, it is not the cause of the wrongdoing. Moral disengagement merely aids in perpetuating corruption, since it ensures the willing and unwavering participation of an entire group, a requirement in this cognitive system whereby different human agents retain different parts of the procurement process, each with their own individual task-goals. The exact origins of corruption within Agency X would require further investigation and a different methodological approach (i.e. a longitudinal study). This was not the intent of this research, and any discussion in this regard would be mere speculation. Nothing in the findings suggest a definitive answer to that question. An answer as to why it takes place now, however, can be given and will be discussed in subsequent sections of this chapter.

In summary, deliberate intention to distort the information system is the result of unethical decision-making by an individual, which is then facilitated by a collective and concerted effort. Such unethical-decision making enjoys the support of others due to the fact that individuals within this environment are morally disengaged. They, through processes of socialization (such as the way distribution of knowledge is imparted), and seeking to feel accepted, will gradually disengage their moral codes, thus avoiding feelings of distress or self-condemnation. As such, it is possible to affirm that morally disengaged individuals do disrupt the information system, thus causing breakdowns in the information flow, in order to conceal certain pieces of information that might otherwise reveal illegalities. The result of this is that transparency is compromised.

Having addressed the core research questions, some key findings will be discussed in the next section of this chapter.

7.5 Discussion of Findings

Sections 7.2, 7.3, and 7.4 aimed at directly addressing the research questions proposed in Chapter 3. The intent was to gain a better understanding as to how this cognitive system operates and thus, comprehend how information is created (relevant to the "creation" phase of transparency) and disrupted, and draw relevant conclusions regarding, not only the unit of analysis but also the themes of transparency and corruption, which are central to this thesis. Thus, this section of the Chapter will discuss some of the most relevant findings.

7.5.1 Corruption: Why?

As discussed previously, it is not possible to ascertain with precision the origins of corruption at Agency X. Such query falls outside the scope of this study. However, it is possible to determine why it perpetuates and has remained largely undeterred. Upon analyzing the data, a few themes emerged which allows me to draw some meaningful conclusions.

The first aspect refers to the power structure present within this system. As discussed in previous sections, power and unethical leadership have often been found to be correlated to wrongdoing in organizations, as studies such as those conducted by Moore et al. (2018) and Brown and Mitchel (2010) show. Such findings were replicated here. As extensively discussed, the unethical leadership at Agency X was the largest source of wrongdoing, leading to the most causes of intentional breakdowns in the information system. Such leadership ensured the cooperation of all involved who, in turn, conferred their power of decision and personal accountability to leaders. The displacement of responsibility disengagement mechanism allowed individuals who

collaborated with such actions (by knowingly distorting processes and inputting incorrect information into technical systems) to do so without feeling self-condemnation or distress. Moreover, it guaranteed their participation even though they did not personally profit from them.

The second aspect refers to the social dynamics that are present at Agency X. They implicate in the perpetuation of corruption in several ways. Firstly, it ensures a network of willing participants through the diffusion of responsibility moral disengagement mechanism. Secondly, the characteristics of the social dynamics present also aid in this respect. For example, the way knowledge is distributed (verbally) ensures that certain practices remain intact, reinforcing the cultural heritage principle. In addition, as identified, it contributes to the informal environment present within this system, which creates pockets of opportunity for corruption to occur, since it ensures such instances are never formally registered. This is consistent with findings by Smith-Crowe et al. (2015) who note that it is the dynamics between formal and informal arrangements that dictate the ethical climate in an organization. To this extent, formal arrangements, such as norms and codes of conduct "act as a constraint" (Smith-Crowe et al. 2015: 12). As noted, formal norms do exist and are available for consultation at Agency X's intranet. However, they are ignored in favor of consulting with colleagues in case of doubts.

The third aspect that needs to be highlighted, refers to the role technical systems themselves play in perpetuating corruption. As discussed, the way the cognitive system has been idealized means that human agents are the hubs between artefacts, which do not communicate directly between themselves. In addition, the most used technical system, IntSys, presents many imbued flaws and, as observed, does not meet the demands of this cognitive system. IntSys itself creates opportunities for wrongdoing to flourish, such as how it documents the quotes received from suppliers allowing buyers the opportunity to manipulate the integrity of the process. Moreover, the

many technical failings have led IntSys to become a source of moral justification. IntSys has been identified with terms such as “inefficient” and “slow” meaning that in order to be effective or speedy, one must circumvent it (as constantly occurs. At the time I last interviewed participants at Agency X, I was informed that there were at least twenty processes not being formally registered on the IntSys, which they would get to doing so when possible). The fact that IntSys was centrally deployed by Ministry X without consulting those at the forefront of actually using the system is obviously a contributing factor in this and consistent with what has been documented by Heeks (2006).

Thus, it can be inferred that the perpetuation of corruption within this cognitive system has been due to three factors: (1) power structure, and the role unethical leadership has played; (2) social dynamics, which have been perpetuated due to distribution of knowledge and informality; (3) the technical systems’ imbued properties, allowing for human agents to be the mediating structures, hubs, and the leaders in information flow. In addition, all three aspects functioned as mechanisms for moral disengagement in the form of (1) displacement of responsibility, (2) diffusion of responsibility, and (3) moral justification. This confirms the applicability of Bandura’s (1986) MD theory to this setting. The mechanisms which he delineates in his theory have been clearly observed.

A few more observations should be made regarding corruption at Agency X. As discussed in Chapter 2, a significant body of research on corruption has treated individuals as people of a morally dubious character (Darley 2005), who rationally reflect about the costs and benefits prior to engaging in acts of corruption. As the data gathered shows, this conception of wrongdoers does not seem to apply to individuals at Agency X. Rather, the decision to support unethical decision-making is not a rational one. Moreover, most who support and facilitate wrongdoing do not

personally benefit from it, which means there cannot have been a rational cost-benefit analysis if the benefit is so low. Benefits can be mostly attributed to social acceptance, but there is no monetary gain. Nor can these individuals claim fear at losing their jobs as would individuals who work for private organizations. As public officers, employed by the Brazilian federal government, these individuals enjoy stability and can only be fired under one single rule: misconduct and wrongdoing[29]. Thus, the view of individuals who are maximum utility-seekers does not apply here, rather Palmer's (2012) categorization of such individuals as "mindless" seems to be more fitting.

Another consideration regarding corruption at Agency X is the openness of it. Corruption is often thought of as extremely covert, difficult to uncover. Yet, at Agency X, it takes place quite openly. As discussed, this is an open-floor environment whereby proximity is quite high, as are the exchanges between individuals. Not even upper management can claim privacy, despite having an office space since, as reported, the walls to those offices are thin, meaning that any conversation that takes place in these spaces can be overheard – in addition to the fact that managers tend to have an open door policy. Furthermore, as discussed, wrongdoing requires a team effort. It requires that most individuals on the task chain facilitate such actions in some way.

In summary, the combination of both DCog and MD as applied to this research has allowed for some insights as to how corruption operates in the context of this governmental agency. It can be inferred from the data gathered that the perpetuation of corruption is multi-pronged and not due to one single reason. Both social and technical aspects have been identified which allow for corruption to keep taking place, meaning that the solution for curbing it must be multi-pronged as well. Solutions that favor one aspect over the other will probably have a limited effect. This further

[29] Even in the case of wrongdoing, civil servant will only be dismissed after a long investigation process conducted by the Comptroller General of the Union.

corroborates the notion that the cognitive system under analysis constitutes a socio-technical system.

7.5.2 How Transparent Is It Really?

The DiCoT methodological approach determines that the researcher delineate five distinct models: physical layout, artefact, information flow, social structure, and evolutionary. As a result of coding data for principles and building the models, a very clear picture of how the cognitive system under analysis operates starts to emerge. And the findings obtained resulted in one specific question regarding the transparency efforts by the Brazilian federal government: how transparent is it really?

The Transparency Portal established in 2004, was considered one of the first in the world at the time. Moreover, as discussed in Chapter 6, Brazil has often sat at the top of indices that demonstrate the degree of openness of countries. This means that Brazil has consistently been found to be one of the most transparent countries in the world. However, upon analyzing the data gathered through the DiCoT structure, a few issues seem to emerge. The first one refers to the limitations of the technical systems that were deployed and form the basis of the transparency system, IntSys, which is tasked with registering the entire procurement process, and SIAFI which registers financial aspects of the process and then feeds it into the Transparency Portal. As discussed both in Chapter 6 and in earlier sections of this present Chapter, IntSys is incapable of capturing everything owing largely to its own imbued limitations. For example, even if the request for quotes goes through IntSys (step VI of the procurement process; see Appendix VII), the replies come back via e-mail, and it is up to the buyer to insert this information manually back into the

system (step XIII). Not only does this leave the technical system subject to error, since the buyer may make mistakes upon typing this information, but also leaves it up to the buyer what exactly they want to insert in the system.

The way the procurement process is set up means that there are several pockets of informality. For example, there are no defined criteria for selecting which suppliers to contact for quotes (it is at buyers' discretion) and much of the discussion that takes place regarding these processes is done directly, a characteristic which is encouraged by the physical layout of the office (open-floor setup). In addition, the cognitive system has been set up so that human agents are both hub and trigger in the sequential control of action. More importantly, though, they are also the ones who act as mediating structures between technical systems. That means that IntSys and SIAFI do not communicate directly. An individual is responsible for that mediation, located in the financial department, on a separate floor, away from negotiations that take place regarding processes. Though, as reviewed, these individuals in the financial department will at times be caught up in unethical decisions that are taken by their superiors, for the most part, their horizon of observation is low, as is their situation awareness.

Another feature of this procurement process is the prominent role the artefact paper has, acting as both distributed memory and trigger. Though it is an inanimate artefact, its importance is greater than that of IntSys, since it will carry more information than IntSys does, and act as a reminder for individuals to act (PFs will be placed on top of desks where they are visible), a capability which IntSys does not have (as reviewed, it does not send trigger reminders, not even when processes are overdue).

In addition to the characteristics mentioned, as can be observed in Figure 6.7 (Chapter 6), the procurement process is a long one, consisting of thirty-nine sequential steps. However, only

two of these steps, steps XXIII and XXXVIII, are recorded on the Transparency Portal through SIAFI. Hence, even if IntSys were an excellent technical system, with no flaws, capable of attending the needs of those at Agency X and of capturing every single piece of information inherent to the procurement process, the output would remain the same: only two instances of information, out of a long range of steps, is open to scrutiny by citizens. Thus, it is possible to conclude that the transparency system, as currently designed, is limited in its capacity to capture information and thus limited in what information it publishes. Citizens who access the Transparency Portal looking to monitor spending will have access to only a limited piece of information. In spite of this, as reviewed in Chapter 2, most of the research conducted on transparency has concerned itself with enhancing citizens' participation, or how to make web portals more accessible. It seems, however, that the creation stage of transparency, which remains largely overlooked, should garner more attention and, in that regard, the DiCoT framework has been an excellent form of evaluating such systems.

Though DCog had never been applied to a governmental setting, this study has validated its applicability for this area of research. This will be discussed further in the next section.

7.5.3 A "Disengaged" Distributed Cognitive System

One of the motivators behind this piece of research was the perception that a certain class of individuals had remained largely overlooked by researchers: low ranking civil servants, particularly those with no contact with citizens, functioning as internal cogs of government, helping the government machine run. Though this class of government workers constitutes one of

the largest content providers for transparency portals (at least in Brazil), they have been, for the most part, under-researched by those who study transparency.

Having already established that a socio-technical approach was needed (due to how transparency had been conceptualized in Chapter 2), DCog and MD were adopted as the theoretical underpinnings. Though neither had ever been applied to the context of a government setting, nor had they ever been applied in conjunction, both seemed a perfect fit for what was the overarching puzzle that had been established previously: understanding why transparency had failed to yield the results expected (i.e. less corruption) in the Brazilian federal government. The fact that DCog favors a micro-approach to the unit of analysis also contributed to how it fit into this study.

The unit of analysis in question, was the cognitive system at Agency X. And in order to apply the DCog theoretical framework to this study in a semi-structured way, the DiCoT methodological framework was adopted. The intent was to make it clear what steps were taken in this research in terms of data gathering and analysis thus setting up the framework for other researchers to replicate this study in future (especially to other settings).

The result was the clear identification of how the cognitive system under analysis operated, how information propagated through the system, which agent – artefact or human – responsible for each part of the process, what the points of breakdown were and why, and what other elements (for instance social) contributed to this specific cognitive system's characteristics, in addition to how the environment influences this system.

Coupled with MD, it then became possible to visualize at which points the system was disengaged and contributed towards causing breakdowns. Both MD and DCog are rooted in (or derive from) cognitive psychology, making them compatible. Both reinforce the cognitive aspect

of individuals, without however dismissing the role the external environment has in shaping the way individuals operate or distribute knowledge. As visualized in Bandura's (1999) triadic reciprocal causation model, both – the environment and the individual – reinforce one another in a bi-directional way. With DCog, a third element is added, which is the artefact. This non-reductionist view was one I was interested in, since, as discussed in Chapter 2, much of the research conducted in e-government has emphasized a technological deterministic view. And, as the result of the way transparency was conceptualized in Chapter 2, it was my contention that transparency was indeed a socio-technical system, whereby individuals and artefacts work in tandem, restricting and reinforcing one another in a bi-directional way. This view, through this study, was confirmed.

An observation regarding the DiCoT methodological framework that was adopted is that it is not a substitute for DCog, the theoretical framework from which it draws its principles. DiCoT merely adds a structure with which to study it, making this research more easily replicable. In other words, one should familiarize onself with DCog prior to utilizing the DiCoT framework. Another observation is that DiCoT should not be taken as a static framework. On the contrary, it is malleable in the sense that as new codes emerge for other DCog principles, the framework can be extended to accommodate these. As previously discussed in Chapter 6, to that extent other studies have similarly either extended the framework or limited it (Berndt et al. 2014; Furniss et al. 2015). The extension of the social structure model in this scenario (see Appendix VIII) reflected the prominent role human agents took in propagating information through the cognitive system.

As previously discussed, the picture painted as a result of analyzing data through the theoretical lens of DCog and MD, demonstrated that though the cognitive system under analysis was indeed a distributed cognitive system, it also showed it was not equally distributed between human agents and artefacts. Rather, individuals functioned as leaders of the information flow and,

in addition as the largest retainers of knowledge. As morally disengaged individuals, this translated into disengaged responses to intentional human breakdowns whenever these occurred. As such, not only can this cognitive system be characterized as distributed, it is also morally disengaged.

Though it had never been applied to the study of an information system at a governmental agency, DiCoT had been applied to several other work settings, such as mobile healthcare work (McKnight and Doherty 2008) and software team interactions (Sharp and Robinson 2006), attesting to its wide range applicability and flexibility. This study further validates its use for this type of setting. The framework set forth in this study can be used as the basis for future studies. The extended social structure model which was formed (see Appendix VIII) should also be considered by those who wish to apply the DiCoT to similar settings, i.e. where the social component clearly leads the technical one.

7.6 Conclusion

This Chapter was aimed at discussing findings and addressing the research questions that had been proposed in Chapter 3. Some meaningful insights were gathered, such as:

- The cognitive distribution between human agents and artefacts, in addition to the environmental influence, demonstrating that individuals led the propagation of information. Though the technical component plays a role in *how* information is registered (according to its own design limitations), it does not dictate *what* gets stored, or even *when*. This attribution is the responsibility of human agents. Thus, it is the individuals who retain the largest portion of knowledge, with the physical layout acting as a facilitator.

- The points of breakdown in the information flow, demonstrating three categories of breakdown: artefact, non-intentional human, and intentional human. This demonstrated that breakdowns occur for different reasons, but also that, in the case of intentional breakdowns, this is due to unethical decision-making (most often from the leadership team). Such breakdowns compromise the quality and integrity of the cognitive system. Moreover, the information stored into technical systems fails to portray reality.
- The presence of moral disengagement mechanisms. Individuals that were integral to the cognitive system were found to be morally disengaged, demonstrating their propensity to engage in wrongdoing. Certain disengagement mechanisms were found to be more frequent than others (such as the displacement of responsibility and diffusion of responsibility), reflecting the social structure within this environment. Moreover, it facilitated breakdowns caused by the intentional action of human agents since it guaranteed collaboration from all, even those who personally did not benefit from such actions.

In addition to the findings above, this Chapter also discussed the reasons for why corruption has persisted within this environment, in addition to issues pertaining to the transparency system and mechanisms in place, questioning how transparent the system actually is. Finally, this Chapter discussed the applicability of the theoretical framework adopted to this research. Though neither DCog nor MD had even been applied to this type of setting (a governmental agency, and to study the links between transparency and corruption), it allowed the researcher to draw meaningful

conclusions and insights. In addition, it proved to be a good framework for future studies in this area.

The next Chapter will further discuss the contributions made as a result of this study, in addition to presenting other pertinent concluding remarks.

CHAPTER 8
CONCLUSION

8.1 Introduction

The previous chapter addressed the research questions by applying the theoretical frameworks defined in Chapter 3 to the unit of analysis under study here: the cognitive system at Agency X. Moreover, it discussed findings, as well as offered additional observations regarding transparency and corruption at Agency X, so as to address the overarching puzzle which has guided this research, which is why transparency has been unable to deter corruption within the Brazilian federal government.

This Chapter is therefore aimed at reviewing the main research findings, in addition to discussing contributions, limitations, and paths for future research. As such, this Chapter is divided as follows: section 8.2 gives an overview of this thesis and how it was structured whilst section 8.3 reviews the main findings discussed in Chapter 7. Section 8.4 then discusses the main contributions this thesis has made and section 8.5 offers some comments regarding generalizability and areas for future studies. Section 8.6 then ends with a few concluding remarks.

8.2 Overview

In Chapter 1, the main intent of this thesis was presented, which was to address the concept of transparency as applied to governments as part of wider investment efforts in the area of e-

government. As more and more governments across the world invest in deploying transparency in order to address issues such as corruption, it seems important to discuss how effective such mechanisms really are. As reviewed, the motivation for this piece of research came from concluding my MSc, whereby my topic of research was the links between transparency and corruption. The conclusion of such work was that transparency had been unable to effectively deter corruption in Brazil; in spite of consistent investments in transparency and opening up government data, Brazil has continued to experience high levels of government corruption.

Such reality was in stark contrast to what findings by scholars such as Bertot et al. (2010) were reporting at the time, which was that countries who most invested in transparency experienced decreasing levels of corruption. Chapter 2, therefore, had the aim of reviewing this literature.

As part of that discussion, it was presented that scholars have mostly approached e-government and transparency through a technological deterministic lens. In other words, the belief has been that technology is transformative and has been the driving force behind change. However, such deterministic view of technology has received criticism, especially as a growing number of e-government initiatives fail to meet their goals. The main reason has been, according to Luna-Reyes et al. (2004) and Rose (2005), that such efforts have overlooked social and organizational factors which play a part in how successful an initiative can be.

Another issue identified in Chapter 2 was regarding the lack of consensus on defining what transparency is. As a result of that discussion, it was proposed that transparency, for the purposes of this study, would be conceptualized as an information flow comprising of three distinct phases: creation of information, publication of information, and public access of information.

Conceptualizing transparency in such a manner, not only clarifies what is meant by transparency within a governmental setting, but also made it easier to identify where the gaps in the literature are. As such, it was identified that the "creation" phase of transparency has been largely overlooked, with most studies concentrating efforts in the publication and public access phases, targeting issues such as how to improve web portals (publication) and how to enhance public civic participation (public access). With few exceptions, however, (Arellano-Gault and Lepore, 2011; González-Zapata and Heeks 2015), the creational aspect of information has hardly been looked at, even though it is what determines the quality of information produced and what information is transmitted to citizens. In addition, it was also identified that even studies which concentrate on this aspect have not researched lower-level civil servants, especially those with no contact with citizens, even though they constitute the largest group of content providers within the government. Thus, this became the focus of this research, i.e. to address this gap in the literature. In doing so, a socio-technical approach was adopted. Likewise, a non-deterministic view on corruption (bounded rationality) was also adopted, since it complements the socio-technical approach better than mindful rationality does.

Chapter 3 then concerned itself with presenting the theoretical framework which would be adopted in this thesis: distributed cognition (Hutchins 1995) and moral disengagement (Bandura 1986) theories, both of which emphasize cognitive aspects. DCog, which draws influence from Vygotsky (1980), proposes that cognition is not constrained to an individual mind. Rather, it is distributed between individuals and artefacts within a particular environment and focuses its attention on cognitive systems and information flows in a particular context. In order to apply DCog to data analysis, the DiCoT methodological framework was adopted. DiCoT draws principles from the DCog theory in order to build five models (physical layout, artefact,

information flow, social structure, and evolutionary) which, together, paint a clear picture of how the cognitive system under analysis operates. Though neither had ever been applied to a governmental institutional setting, its wide-ranging applicability indicated that this framework would be suitable for this research.

In addition to DCog, MD was adopted in order to study the issue of corruption. MD, which is rooted in Bandura's (1986) moral agency concept as part of his social cognitive theory, posits that, in order for individuals to engage in acts of corruption, they go through a process of "switching off" their moral codes. In other words, they morally disengage in order to avoid negative feelings such as distress and self-condemnation. As explained, most people operate by a high standard of moral code. However, individuals are not immune to their social contexts and are largely influenced by it. Additionally, individuals tend to value the opinion of others within their social circles. In a work environment where a high level of unethical decision-making exists, the tendency would be for individuals to gradually morally disengage in order to conform to that particular environment. As a result, normally reprehensible actions then become "normalized" in the eyes of those within that system, allowing for unethical decision-making to perpetuate. Eight moral disengagement mechanisms are delineated by Bandura (1986): moral justification, advantageous comparison, euphemistic labeling, displacement of responsibility, diffusion of responsibility, minimization, dehumanization, and attribution of blame.

By combining both DCog and MD, the objective was to (1) comprehend how the cognitive system under analysis operated, and how cognitive processes were distributed between members (artefacts and human agents); (2) identify causes of breakdown to the information flow, and its effects on the information system; and (3) comprehend how MD mechanisms facilitated the breakdown of cognitive processes. By being able to address these questions, and through an in-

depth study at the micro-level, it was hoped that an understanding of how transparency and corruption, and the links between the two, operate.

Chapter 4 then presented the research design that was adopted. As reviewed, a case study approach was outlined, an approach which is suitable for interpretive types of studies. In order to approach such study, a governmental agency, referred to as Agency X throughout this study due to privacy issues, was chosen as the *locus* for the unit of analysis: the cognitive system (in accordance with the DCog theoretical framework). The selection of such agency obeyed certain criteria: (1) this agency had to be located within the Brazilian federal government, since the main motivation for this research was the Brazilian Transparency Portal; (2) traces of acts of wrongdoing had to be present, since the intent was to analyze the links between transparency and corruption; (3) access had to be granted in order to gather a meaningful amount of data for analysis.

Data collection methods used were semi-structured interviews, participant observation, and document analysis. Furthermore, Moore et al.'s (2012) Moral Disengagement Measure was applied in order to identify the existence of moral disengagement mechanisms. The intention for utilizing this quantitative method was merely to reinforce the validity of the data that would later be qualitatively analyzed. Data was analyzed by coding it for DCog principles listed in the DiCoT methodological framework. Data was also coded for moral disengagement mechanisms, in accordance with Bandura's (2006) coding manual, and then coded a third time in an inductive manner in order to ensure that no significant theme had been unaccounted for.

Chapter 5 then presented a discussion of the context in which the unit of analysis operates in. As discussed, in such complex settings such as a governmental institution, it is important to understand the dynamics that may constrain or encourage the information system. Thus, what

followed was an extensive discussion of broader legal and political factors, in conjunction with organizational aspects, which have affected how this system operates. At the end of that Chapter, Figure 5.19 gave an overview of the many influencing factors the information system under analysis is subject to.

Chapter 6 had the aim of analyzing the data gathered and coded by firstly building the five models delineated by Furniss and Blandford (2006) in their methodological framework, and then analyzing the data for MD mechanisms. By employing DiCoT, a clear picture emerged of how the cognitive system at Agency X operates. The different models highlighted different aspects of the system, which when combined gave clear indications of how cognitive processes are coordinated and in which ways breakdowns occur. Thus, the DiCoT model allowed for the first two research questions to be addressed. Regarding the analysis through MD, it was possible to identify that human agents within this cognitive system are indeed morally disengaged. Moreover, it was possible to identify how such disengaged thinking facilitated breakdowns. These findings, both DiCoT and MD, were then the focus of discussion in Chapter 7. These will be discussed in the next section of this Chapter.

8.3 Overview of Findings

As a result of applying the theoretical framework that had been proposed for data analysis, some meaningful findings were made. Most of these directly addressed the research questions that had been proposed in Chapter 3:

R1: How are cognitive processes distributed between agents (human and artefact) at Agency X?

R2: How do breakdowns impact the cognitive system at Agency X?

R3: How do moral disengagement mechanisms facilitate the breakdown of cognitive systems?

Regarding R1, by applying the DiCoT methodological framework to data and building the five models dictated by Furniss and Blandford (2006), a clear view of how the cognitive system at Agency X was distributed was established. Firstly, it became clear that cognition is not evenly distributed, with the human component largely responsible for leading information propagation and flow in the sequential control of action. Since artefacts (technical and paper) do not communicate with one another, it was up to individuals to act as the hub between them. In addition, due to the imbued technical properties of IntSys, the component also played the role of the trigger, aided by the PF.

This dynamic meant that the core of representation media between individuals was verbal language, which revealed the high prevalence of informal communication that took place at Agency X. This also meant that human agents act as mediating structures, communicating directly with one another and often bypassing the system. This characteristic of the system was facilitated by the physical layout which promoted proximity between individuals thereby resulting in a high horizon of information. Additionally, due to the fact that the PF had a more important role in the information system than the technical system did and that it is an inanimate object, individuals were forced to move through the physical space of the environment in order to take the PF to the next team member in the sequential control of action. This characteristic of the work process also

facilitated the high level of informality of the cognitive system. Aspects of the social structure, such as the distribution of knowledge and hierarchy, also ensured the perpetuation of such practices (cultural heritage).

These aspects of the cognitive system – the dominant role of the human component and the high level of informality, coupled with aspects of the social structure contributed to many of the points of breakdown, as would then later be discussed in response to R2. As reviewed, three categories for breakdown were identified: artefact, non-intentional-human, and intentional human.

Regarding the breakdowns due to artefacts, this was the result of limitations and crashes experienced with the use of IntSys. As discussed in Chapter 7, IntSys did not fully attend to the needs of this cognitive system, in addition to at times being unreliable and failing to correspond in the way it was meant to. This led to breakdowns in the information flow, forcing the human agent to work around such technical difficulties. In the case of non-intentional human breakdowns, this was mostly because of the dominant role individuals had to take in propagating and transforming information and how procedures have been built. Additionally, such breakdowns constituted the action of one single individual.

In the case of intentional breakdowns, on the other hand, this would have been normally due to the concerted effort of several individuals working together at the direction of a member of the upper management team. This particular breakdown revealed how exactly wrongdoing takes place within this cognitive system, which was largely facilitated by the social dynamics at play. The source of such breakdown was mostly managers who directed individuals to distort information and bypass procedures in order to conceal illegalities. Such breakdowns required the concerted effort of several team members due to how tasks are sequenced (i.e. each team member

retains a part). Thus, intentional breakdowns were a team effort. Such breakdowns compromised the quality of the information stored and later divulged to the external environment via the Transparency Portal. It was also largely facilitated by collective moral disengagement which had been identified and addressed the third research question proposed.

Data analyzed not only showed that individuals were morally disengaged, but also how it facilitated and supported unethical decision-making. The three most commonly identified mechanisms of disengagement were displacement of responsibility, diffusion of responsibility, and moral justification. The most common of all, displacement of responsibility, reflected the strong hierarchical structure within this cognitive system, a finding which had revealed itself through the DiCoT analysis. Displacement of responsibility allowed individuals to follow their managers' orders to bypass procedures and system whilst evading self-condemnation and distress. It was made possible since individuals delegated their own personal accountability and power of decision to a proxy, i.e. their managers. This finding was consistent with those obtained in organizational studies, whereby unethical leadership is often singled out as a driver for wrongdoing (Brown et al. 2005; Moore et al. 2018), contributing to the validity of these findings.

The social dynamics present also manifested themselves as a form of moral disengagement, in the form of diffusion of responsibility. As identified, wrongdoing was a collaborative effort, and individuals were found to collaborate whether they benefitted from such actions themselves or not. This finding demonstrated the extent of social influence, as discussed in Chapter 3. Reinforcing this mechanism are the cultural heritage and distribution of knowledge principles. The former ensures that certain procedures are perpetuated due to the belief that "it has always been like that". The latter reinforces the informal manner through which information is communicated, ensuring

that the human agents are the largest retainers of knowledge, thus serving as a reference to new participants to this cognitive system.

The third most observed moral disengagement mechanism was moral justification, which often manifested itself in the form of blaming technical systems' imbued flaws. Though the system failings are real, these were used as an excuse to justify bypassing procedures and thus causing breakdowns to the information. Together, all three disengagement mechanisms ensured that participants in the cognitive system became "willing" participants in wrongdoing and facilitators in unethical decision-making.

The findings obtained confirmed that this work system, responsible for creating information as a necessary phase of the transparency system, can indeed be framed as a distributed cognitive system, making DCog a suitable theoretical framework for this type of study. Moreover, when coupled with MD, it painted a clear picture of the points at which this cognitive system disengaged and how that facilitates the perpetuation of wrongdoing.

In that regard, as part of the discussion on findings in Chapter 7, three factors were highlighted as to what has allowed for corruption to persist within this cognitive system: (1) power structure; (2) social dynamics; (3) technical systems' imbued properties. All three of these aspects functioned as mechanisms for moral disengagement, in the form of (1) displacement of responsibility, (2) diffusion of responsibility, and (2) moral justification.

This not only confirms the applicability of Bandura's (1986) theory but also reinforces that to deal with corruption effectively, a multi-pronged solution must be adopted. An emphasis solely on the technical will mean that the social aspects will be overlooked. Likewise, pure emphasis on

the social will result in technical systems which continue to fall short, in terms of the needs identified.

The final finding discussed in Chapter 7 referred to the question of how transparent the system that has been deployed by the Brazilian federal government is. Findings suggest that it is only partially transparent, particularly since it is only designed to reveal two instances in a procurement process which comprises of thirty-nine steps (see Appendix VII). It seems therefore disingenuous to continue to invest efforts in enhancing citizen engagement and participation in a transparency system that is only partially transparent, in spite of claims to the contrary and this is an area that would perhaps warrant future studies in this regard.

This research has provided an in-depth view of how information is created within a governmental agency, comprising of the creation stage of transparency. Thus, several contributions were made, which will be discussed in the next section of this Chapter.

8.4 Contributions

The need for this piece of research arose out of the need to fill a gap in the existing e-government literature, which has mostly produced technological-deterministic studies, overlooking social and cognitive aspects which also impact the efficacy of a technical solution. As a result, several contributions can be listed as a result of this research effort.

8.4.1 Conceptual

The first contribution that can be listed is in regard to how transparency has been conceptualized in this study. As discussed in Chapter 2, researchers have been unable to agree on one single definition for transparency, leading to a preponderance of elusive definitions, such as "lifting the veil", which result in a difficulty in approaching the concept, measuring it, and studying it.

As a result, based on Taylor and Lips' (2008) definition that transparency refers to the creation and flow of information, and Hosseini et al.'s (2018) recommendation that to understand transparency it is necessary to understand who the stakeholders are, in addition to the medium through which it is transmitted, transparency was conceptualized here as an information system. Moreover, based on the identification of stakeholders and medium, it was possible to ascertain that this information system comprised of three distinct phases: the creation of information, the publication of information, and public access.

Conceptualizing transparency in such a manner thus sets the basis for comparison between studies in this field. In that regard, it is possible to view that though many pieces of research approach the same topic of transparency, they are in fact discussing different aspects of it, which means findings between them are not directly comparable. Moreover, such conceptualization highlights the fact that researchers have mostly concentrated their efforts on the publication and public access phases of transparency, revealing where the gaps in the literature exist. In addition, unpacking the concept makes it clear that in order for transparency to be truly effective, all three stages of the information system must be addressed. Only concentrating efforts on how to engage

citizens will not make transparency effective if the creation phase of it is subject to faults, as is the case of the unit of analysis which was studied in this thesis.

8.4.2 Framework

The approach to this study was a novel one since it involved studying a system that was disengaged and actively partaking in corruption. To my knowledge, there is no other study that has taken such an approach in the e-government field. This meant that there was no basis for comparison to other similar studies on how to undertake such a topic. As a result, a new framework had to be established.

Borrowing from other disciplines the DCog theoretical framework, this research also served to validate such an approach to this setting, i.e. a governmental institution. Its wide-ranging application in previous studies (as discussed in Chapter 3), indicated that it would indeed be applicable, particularly since the focus of DCog is on cognitive systems or information systems (terms are at times used interchangeably), precisely what transparency had been conceptualized as. In addition to DCog, the DiCoT methodological framework was also adopted, which had mostly been applied to medical settings in the past. Thus, this thesis also served to validate its use within a governmental institution.

The DiCoT framework, as a semi-structured approach to data analysis, had one of its models – the social structure model – extended and consolidated, serving as a framework for future studies with similar characteristics; that is, whereby the social component of the cognitive system is more dominant than the technical one. DiCoT has several qualities to it: (1) it provides a structure

on how to apply DCog to data analysis; (2) the models generated by the DiCoT analysis grant a very clear picture of how the cognitive system operates, and what role each component has in making information flow; (3) it gives a clear overview of where the breakdowns are located and what their sources are; (4) it gives indications of how the system can be improved in order to close such gaps; (5) its structured approach allows other researchers to replicate this study and test it in other similar settings. This is a characteristic that is especially useful in this scenario since, as reviewed in Chapter 5, governments are very complex organizations subject to many different influencing factors. Figure 5.19 summarized that by demonstrating the many factors of influence to which this cognitive system was subject to. As such, this structured approach allows the researcher to navigate through that, with DCog's emphasis on the cognitive system as the unit of analysis aiding in that regard.

8.4.3 Contribution to the Field of e-Government

This thesis has made several contributions to the field of e-government, which are worth mentioning. First of all, it identified a gap in the transparency literature, demonstrating that: (1) studies to date have been mostly technological deterministic, revealing the need for more socio-technological studies; (2) that studies have concentrated themselves mostly on certain aspects of transparency, whilst overlooking others, such as the creation of information.

Moreover, as part of the literature review undertaken, it seems that a certain category of civil servants, the low-ranking ones, with no decision-making power and no contact with citizens, has been overlooked, even though they constitute the largest group of content providers to the Transparency Portal (at least in Brazil, that is the case). As the largest group of content providers,

it seems that they should merit some attention, especially since they are the ones dictating the quality of information that is being produced and published on portals.

Another innovation in terms of the approach undertaken in this thesis refers to the fact that it picked an agency where ongoing acts of corruption exist, thereby giving a detailed and actual account of how corruption takes place in a governmental institution, and how such actions undermine transparency effort. No study to date has undertaken such an approach. The result is that some meaningful insights were generated, in addition to actionable items to be undertaken in order to effectively deal with the issue.

This thesis, therefore, sought to fill several gaps and, as a result, provided a meaningful set of results and a methodological framework which can be replicated in future studies. This will be discussed in the next section of this Chapter.

8.5 Generalization and Future Research

The downfall of undertaking a case study approach refers to the fact that findings obtained here cannot be generalized. They are thus restricted to this particular setting.

However, the findings obtained do give some indication as to the validity of them in other settings. First of all, regarding moral disengagement mechanisms, findings obtained as a result of this study replicated results obtained in other disparate settings, i.e. corporations (Moore et al. 2018). This thus indicates that such findings are not restricted to Agency X. As MD, however, had never been applied to study government corruption, it would be interesting for other researchers to extend this finding and verify whether it continues to replicate in other national contexts.

In this regard, the framework set forth in this thesis for approaching moral disengagement can and should be applied to other governmental institutions. As Moore et al. (2012) affirm, the Moral Disengagement Measure tests individuals' propensity to morally disengage, which is linked to unethical decision-making. Testing individuals' propensity within governments should be an area of future research. This would allow for the identification of areas in government more likely to engage in corruption, thus allowing for similar in-depth studies such as the one undertaken here.

Regarding other general findings, such as how the cognitive system is distributed within Agency X, though the results itself are not replicable, the framework of analysis is. As discussed previously, the social structure model in the DiCoT framework was extended in order to account for the dominance of the social over the technical (see Appendix VIII). This extended model may serve as a basis for future pieces of research whereby similar dynamics are observed. In fact, more studies which adopt DCog as a theoretical framework for the study of transparency are encouraged. More studies concerning themselves with the creation phase of transparency are required in order to broaden the understanding of how information is produced and how to make transparency more effective, and DCog, in conjunction with DiCoT makes for an ideal theoretical framework, as validated in this thesis.

This thesis has also indicated the need for more studies which focus on low-level civil servants. These are the cogs to the government machine and, as such, an integral part of the government institution. As the largest content providers of information, more research is encouraged, particularly in other national contexts, as to how they operate and the dynamics of their particular cognitive systems.

8.6 Concluding Remarks

This thesis sought to fill a clear gap in the e-government literature regarding transparency studies. As discussed extensively in Chapter 2, most studies that have approached the topic of transparency have failed to give a full account as to how exactly transparency operates and why it has failed to yield expected results, i.e. less corruption, in certain national contexts.

As identified, there has been a plethora of studies emphasizing the transformative effects of technology, which have overlooked social aspects and have the ability to undermine the efficacy of technology. Though there has been a growing number of studies seeking to fill that gap and which have adopted a socio-technical approach to technology, more research still needs to be undertaken in that regard.

Another issue identified is in reference to how transparency has been conceptualized thus far. Such effusive use of elusive terms to describe it makes it difficult to measure transparency and even study it. As a result of these discussions, a new form of conceptualizing transparency was introduced, whereby it refers to an information flow, consisting of three distinct phases: creation of information, publication, and public access. By conceptualizing transparency in such a way, it became clear that the creation aspect of transparency has been largely overlooked. Thus, in order to address the various gaps in the literature, this became the focus of this thesis. In that regard, a DCog theoretical approach, combined with MD, was adopted, the combination of which, along with DiCoT as a methodological framework, allowed for some meaningful insights and conclusions, amongst which insights as to why corruption continues to flourish at the governmental agency used as the *locus* for unit of analysis – the cognitive system – in spite of apparent efforts to curb it.

One of the main results obtained here was that transparency is not so transparent after all, something which could only be confirmed through this micro-level approach to the issue. This, within itself, attests to the value of this thesis, thereby setting the framework for future studies in this field.

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e-SIC: https://esic.cgu.gov.br/sistema/site/index.aspx

National Treasury Secretary: http://www.tesouro.fazenda.gov.br/

Public Prosecutors' Office on Car-Wash investigation:
http://www.mpf.mp.br/para-o-cidadao/caso-lava-jato

Testimonies as part of the Car-Wash investigation:
https://www.youtube.com/user/MultiEstadao/videos

Transparency Portal for the Brazilian federal government:
http://www.portaltransparencia.gov.br/

APPENDIX I

Data Corpus

	UNIT OF ANALYSIS			CONTEXT	
CASE STUDY DATA	**INTERVIEWS**	**DIRECT OBSERVATION**	**DOCUMENTS**	**INTERVIEWS**	**EXTERNAL DOCUMENTS**
SOURCES OF EVIDENCE	Transcripts for semi-structured interviews	Field notes	Internal procedure manuals (2); Internal norm guidelines (62); presentations (.ppt) (1); screenshots of internal systems (23); copies of purchase orders.	Transcripts for semi-structured interviews	Pieces of legislation (5); Government manuals (6); Government websites (6); Government reports (12); Investigation documents (49); Witness statement videos (113); Newspaper articles (143); Reports from external agencies (7); Social media screenshots (4)
NUMBER	**45**	**42**	**71**	**7**	**339**

Profile of interviewees (Agency X) – 1st round:	**Profile of interviewees (Agency X) – 2nd round:**
Director (1) Manager (5) Purchasing Department (16) Financial Department (5) Technical Support (1)	Manager (1) Purchasing Department (13) Financial Department (3)

APPENDIX II

DCog Concepts and Principles Associated with DiCoT (Furniss and Blandford 2006)

Associated with the information flow model

Information movement

Information moves around the system. This can be achieved in a number of different ways, which have different functional consequences for information processing. These ways differ in their representation and their physical realisation. Different mechanisms include: passing physical artefacts; text; graphical representation; verbal; facial expression; telephone; electronic mail; and alarms. Even inaction might communicate information (Hutchins 1995).

Information transformation

Information can be represented in different forms; transformations occur when the representation of information changes. This can happen through artefacts and communications between people. Appropriate representations support reasoning and problem solving (Hutchins 1995). One important transformation is filtering, in which information is gathered, sifted, and structured.

Information hubs

Information hubs can be considered as a central focus where different information channels meet, and where different information sources are processed together—e.g. where decisions are made on various sources of information (Blandford and Wong 2004). Busy information hubs can be accompanied by buffers that control the information to the hub, to keep it working effectively.

Buffering

As information propagates around a system, there may be times when the arrival of new information interferes with important ongoing activity. This can create conflict and increase the chances of an error occurring, either because the new information gets lost or distorted or because the interruption provokes a mistake within the ongoing activity (Hutchins 1995, p. 195). Buffering allows the new information to be held up until an appropriate time, when it can be introduced.

Communication bandwidth

Face-to-face communications typically impart more information than those conducted by other means, including computer-mediated communication, radio, and telephone (Hutchins 1995, p. 232). This richness needs to be recognised when technologies are redesigned.

Informal communication

Informal communication can play an important functional role in the system, including the propagation of important information about the state of the system and the transfer of knowledge through stories, which can have important consequences for learning how the system behaves (Hutchins 1995).

Behavioural trigger factors

It is possible for a group of individuals to operate without an overall plan as each member only needs to know what to do in response to certain local factors. These can be dubbed "trigger factors" because of their property of triggering behaviour (Hutchins 1995).

Associated with the physical model

Space and cognition

Hollan et al. (2000) discuss the role of space in supporting cognition. They present examples of the use of space such as supporting choice and problem solving. The ways in which physical layout supports (or fails to support) cognition should be assessed.

Perceptual principle

Norman (1995, p. 72) argues that spatial representations provide more support for cognition than non-spatial ones provided that there is a clear mapping between the spatial layout of the representation and that which it represents. The quality of the mapping between spatial layout and cognitive structures should be assessed.

Naturalness principle

Similarly, Norman (1995, p. 72) argues that cognition is aided when the form of the representation matches the properties of what it represents; in these cases what is experienced is closer to the actual thing, so the necessary mental transformations to make use of the representation are reduced. This is referred to elsewhere as "stimulus–response compatibility".

Subtle bodily supports

In interacting with the environment, an individual may use their body to support their cognitive processes; for example, pointing at a place in a book while responding to an interruption is part of the mechanism of remembering where we are (Hutchins 1995, p. 236). The system should be assessed in terms of the extent to which bodily supports are or can be used.

Situation awareness

One of the key aspects of shared tasks is that people need to be kept informed of what is going on, what has happened, and what is planned (Norman 1995). The quality of this situation awareness can be influenced by how accessible the work of the team is. This can also be influenced by the proximity of the person, involving both observation and overhearing conversation.

Horizon of observation

The horizon of observation is what can be seen or heard by a person (Hutchins 1995, p. 268). For each person in an environment, this depends on their physical location, the activities they are close to, what they can see, and the manner in which activities take place. The horizon of observation of a person plays a large role in influencing their situation awareness.

Arrangement of equipment

From a DCog perspective, the physical layout of equipment affects access to information and hence the possibilities for computation. This applies to the different levels of access to people, their conversations and their work as well as to physical representations and artefacts (Hutchins 1995, p. 197).

Associated with artefact models

Representation—goal parity

One way in which external artefacts can aid cognition is by providing an explicit representation of the relationship between the current state and a goal state (Hutchins 1995). The closer the representation is to the cognitive need or goal of the user, the more powerful that representation will be.

Mediating artefacts

To support activities, people make use of "mediating artefacts" (Hutchins 1995, p. 290). Mediating artefacts include any artefacts that are brought into coordination in the completion of the task.

Creating scaffolding

Hollan et al. (2000, p. 192) argue that people use their environment constantly by creating "external scaffolding to simplify our cognitive tasks". For example, we may create reminders of where we are in a task.

Coordination of resources

Abstract information structures, or "resources", can be internally and externally coordinated to aid action and cognition. The six resources Wright et al. (2000) describe in their Resources Model are as follows: plans, goals, affordance, history, action–effect, and current state.

Social model

Social structure and goal structure

The social structure of an organisation can be superimposed with a goal structure such that a subordinate can only stop when their superior determines that their goals have been met. In this manner, the goals filter down through a hierarchy with overlapping responsibility. This creates robustness in the system through group monitoring and job sharing, if necessary, to get the work done. It also means that the system can work through individuals whose main concerns are their local goals. (Hutchins 1995, p. 203)

Socially distributed properties of cognition

The "performance of cognitive tasks that exceed individual abilities is always shaped by a social organisation of Distributed Cognition" (Hutchins 1995, p. 262). Two ways that social distribution can be organised to produce some cognitive effect include: (1) lots of overlap and the sharing of responsibilities for error checking and (2) separating communication channels to make sure that decisions are robust in checking that multiple independent sources agree.

Evolutionary model

Cultural heritage

Hutchins (1995, p. 169) extends Simon's (1981) parable of an ant's movements scouring a beach. In this, we are asked to envisage a whole history of ants searching for food. After a time, the seemingly random behaviour becomes more focused and directed as the later ants can go straight to the food source. In refraining from attributing, a greater intelligence to the later ants the changes that we have actually been observing to influence behaviour has been the changing landscape as chemical trails have been left on the beach. Similarly, Hutchins argues people (in communities) have been left with an enriched landscape to support our behaviour. In the case of ship navigation, the team has adopted maps, tools, strategies, and lessons all developed and laid down by previous generations. This forms part of our cultural heritage.

Expert coupling

The more interaction and experience a user has with a system the better they perform in it as they become tightly coupled with the environment. Here, the processing loops in the functional cognitive system become tight, fast, and spontaneous (Hollan et al. 2000 p. 186).

APPENDIX III

Moral Disengagement Measure

(Original in English)

1. It is okay to spread rumors to defend those you care about. (MJ)
2. Taking something without the owner's permission is okay as long as you're just borrowing it. (EL)
3. Considering the ways people grossly misrepresent themselves, it's hardly a sin to inflate your own accomplishments a bit. (AC)
4. People shouldn't be held accountable for doing questionable things when they were just doing what an authority figure told them to do. (DIS)
5. People can't be blamed for doing things that are technically wrong when all their friends are doing it too. (DIF)
6. Taking personal credit for ideas that were not your own is no big deal. (DC)
7. Some people have to be treated roughly because they lack feelings that can be hurt. (DH)
8. People who get mistreated have usually done something to bring it on themselves. (AB)

Items measured on a 7-point Likert scale ranging from "strongly disagree" to "strongly agree". MJ=Moral justification; EL=Euphemistic labeling; AC=Advantageous comparison; DIS=Displacement of responsibility; DIF=Diffusion of responsibility; DC=Distorting consequences; AB=Attribution of blame; DH=Dehumanization

Reference: Moore, C., Detert, J.R., Trevino, L.K., Baker, V.L., & Mayer, D.M. (2012). Why employees do bad things: Moral disengagement and unethical organizational behavior. *Personnel Psychology, 65,* 1-48.

(Translated to Portuguese)

Escala de Desengajamento Moral

Em uma escala de 1 a 7 (1 = discordo totalmente; 7 = concordo totalmente), responda:

	Discordo Totalmente	Discordo Fortemente	Discordo Parcialmente	Nem Concordo nem Discordo	Concordo Parcialmente	Concordo Fortemente	Concordo Totalmente
	1	**2**	**3**	**4**	**5**	**6**	**7**
Não há problemas em espalhar rumores se for para defender pessoas próximas de quem gostamos.							
Tomar algo de alguém sem sua permissão não tem nada demais contanto que você esteja apenas tomando emprestado.							
Considerando as formas como as pessoas frequentemente mentem a respeito de si mesmas, não é nenhum pecado inflar as próprias conquistas de vez em quando.							
As pessoas não deveriam ser responsabilizadas por fazerem algumas coisas questionáveis se estavam apenas cumprindo ordens.							
As pessoas não podem ser culpadas por fazer coisas que são tecnicamente erradas se todos os seus amigos também o estão.							
Se apropriar das ideias dos outros não tem nada demais.							
Algumas pessoas devem ser maltratadas pois não são facilmente magoadas.							
As pessoas que são maltratadas normalmente fizeram por merecer.							

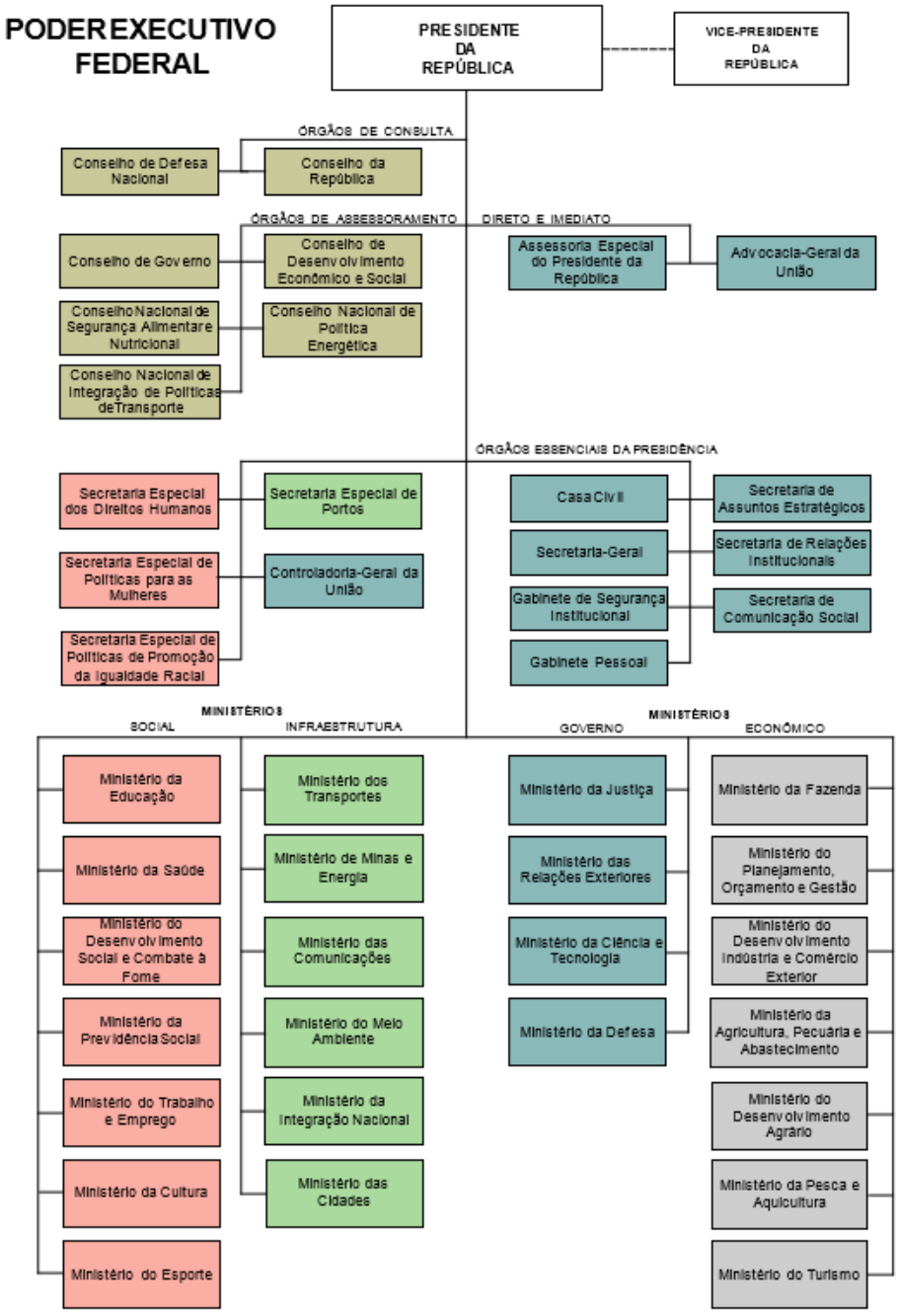
APPENDIX IV

Manual for Coding Moral Disengagement (Bandura 2006)

Categories	Definition
Moral Justification	Harmful products and practices are made socially acceptable and sanctified by moral, social, and economic justifications
Advantageous Comparison	How products and organizational practices are viewed is colored by what they are compared against. By exploiting the contrast principle, harmful products and practices are made acceptable or even benign.
Euphemistic Labeling	Activities can take on different appearances, depending on what they are called. Euphemistic language is widely used to make harmful products and activities respectable and to reduce personal responsibility for it. Different varieties of language of nonresponsibility exist. One form relies on sanitizing language.
Displacement of Responsibility	Displacement of responsibility operates by obscuring or minimizing personal accountability for the harm caused by an organization or social system. Under displaced responsibility, members view their actions as stemming from the dictates of authorities rather than being personally responsible for them. Because they are not the actual agent of their actions, they are spared self-condemning reactions. They are simply carrying out orders issued by others. Sometimes the responsibility is shifted to compelling social circumstances as when employees argue they should not be blamed for offering money to foreign officials if that's what is needed to do business in their society. In the sanctioning of harmful practices, responsibility is rarely assumed openly. Only obtuse authorities would leave themselves accusable of authorizing harmful practices. They usually invite and support them in insidious ways by surreptitious sanctioning systems for personal and social protection. Authorities often act in ways that keep themselves intentionally uninformed. They do not search for negative evidence. Obvious questions that would reveal incriminating information remain unasked, so that officials do not find out what they do not want to know. Implicit agreements and insulating social arrangements are created that leave the higher echelons free from blame.
Diffusion of Responsibility	Personal accountability is also weakened or obscured by diffusing responsibility. Personal accountability for one's contribution to harmful activities can be dispersed in three ways. Group decision making is a common practice to reduce a sense of personal accountability for harmful practices. Social organizations go to great lengths to devise mechanisms for obscuring responsibility for decisions that will affect others adversely. A sense of responsibility can be diffused, and thereby diminished, by division of labor. Collective action is still another expedient for weakening moral control. Any harm done by a group can always be attributed largely to the behavior of others Most enterprises require the services of many people, each performing subdivided jobs that seem harmless in themselves. After activities become routinized into detached subfunctions, people shift their attention from the morality of what they are doing to the operational details and efficiency of their specific job. When everyone is allegedly responsible, no one really feels responsible. These are two ways in which nonresponsibility through displacement and diffusion of responsibility is revealed. Social arrangements of mazzy and diffused modes of authorization of harmful products, and social practices that permit personal deniability, i.e., I didn't authorize it. I didn't know the research evidence, I didn't know they were ignoring the safeguards.
Minimizing or Distorting Harmful Effects	Other ways of weakening moral control operate by minimizing, disregarding or even disputing the harmful effects of one's action. When people pursue activities that harm others, they avoid facing the harm they cause or minimize it. If minimization does not work, the evidence of harm can be discredited. As long as the harmful results of one's conduct are ignored, minimized, or disbelieved there is little reason for self-censure to be activated. This is a central mechanism in corporate moral disengagement because producing products or engaging in practices that are known to injure or kill people would result in social censure and self-condemnation.
Attribution of Blame	Blaming the victim for bringing the suffering on themselves is another expedient that serves self-exonerative purposes. Attribution of blame should be distinguished from displacement of responsibility. In responsibility displacement, accountability for our actions is shifted to the persons giving the orders. They are not the decision makers or prescribers of the corporate practices. They are simply carrying out orders. In blame attribution, the victims of the products or the harmful practices are blamed for bringing the suffering on themselves. In short, responsibility displacement blames the chain of command; attribution of blame, blames the victim.
Dehumanization	The final set of disengagement practices operates on the recipients of detrimental practices. The strength of moral self-censure depends on how the perpetrators regard the people they mistreat. To perceive another as human activates empathetic reactions through a sense of common humanity. The joys and suffering of those with whom one identifies are more vicariously arousing than are those of strangers or those divested of human qualities. It is difficult to mistreat humanized persons without risking personal distress and self-condemnation. Self-censure for cruel conduct can be disengaged or blunted by stripping people of human qualities. Once dehumanized, they are no longer viewed as persons with feelings, hopes, and concerns but as subhuman objects. If dispossessing one's foes of humanness does not weaken self-censure, it can be eliminated by attributing demonic or bestial qualities to them.

APPENDIX V

Organogram for the Brazilian Federal Government



APPENDIX VI

Legislative Exemptions for Bidding Processes (Law N. 8666/1993)

Article 24. Needless to bidding:

I - for works and engineering services worth up to 10% (ten percent) of the limit provided in paragraph "a" of item I of the preceding article, provided they do not relate to portions of the same work or service or to works and services of the same nature on the same site that may be made jointly and concurrently; (Writing amended by Law No. 9648 of 1998)

II - for shopping and other services of value to 10% (ten percent) of the limit provided in paragraph "a" of item II of the previous article and divestitures, as provided in this Law, provided they do not relate to a parcel of a service, purchase or sale of a major character that can be done at once; (Writing amended by Law No. 9648 of 1998)

III - in case of war or serious disorder;

IV - in cases of emergency or calamity, when it is urgent to address a situation that can damage or compromise the security of persons, works, services, equipment and other property, public or private, and only for the goods necessary to address situation of emergency or calamity and for the portions of works and services that may be completed within 180 (one hundred and eighty) days consecutive, uninterrupted counted the occurrence of emergency or calamity: the extension of their contracts;

V - when not to respond to the bidding parties before and this, rightly, can not be repeated without prejudice to the Government, held in this case, all the set conditions;

VI - when the Union has to intervene in the economic domain to regulate prices or supplies normalize;

VII - when the price proposals setting forth clearly higher than in the domestic market, or are incompatible with those fixed by the official organs, in which case, subject to the sole paragraph of art. 48 of this Law and, if the situation persists, you may be awarded directly for goods or services for value not exceeding that in the record prices, or services;
(See § 3 of article 48.)

VIII - to acquire, by legal persons of public law, goods produced or services provided by the agency or entity that integrates the Public Administration and has been created for this specific purpose on a date prior to the enactment of this Act, provided that the price contract is consistent with the market price; (Writing amended by Law No. 8883, 1994)

IX - when it may compromise national security, in the cases established by decree of the President, after hearing the National Defense Council;

X - for the purchase or lease of property intended to meet essential needs of the administration, installation requirements and location conditioning their choice, provided the price is consistent with the market value, according to preliminary assessment; (Writing by Law No. 8883, 1994)

XI - the hiring of remaining works, service or supply as a result of contract termination, provided that met the sort order of the previous bidding and accepting the same terms offered by the winning bidder, including as to price, appropriately adjusted;

XII - on purchases of fruits and vegetables, bread and other perishable commodities, the time required to achieve the corresponding bidding processes, performed directly based on the price of the day: (Text as determined by Law No. 8883, 1994)

XIII - the hiring of Brazilian institution responsible regimental or statutory research, teaching or development of institutional or institution dedicated to the social rehabilitation of prisoners, since the institution has unquestionable ethical and professional reputation and not for profit; (Wording Law No. 8883, 1994)

XIV - to purchase goods or services pursuant to a specific international agreement approved by Congress, when the conditions offered are clearly advantageous to the Government; (Writing amended by Law No. 8883, 1994)

XV - for the purchase or restoration of works of art and historical objects, certified authenticity, they are compatible or related purposes to the agency or entity.

XVI - to print the official journals, use of standardized forms of management, technical issues and officials as well as to provide computer services to a legal entity of public law, by bodies or entities included in the Public Administration, created for this specific purpose; (Included by Law No. 8883, 1994)

XVII - for the purchase of components or parts of domestic or foreign, required for maintenance of equipment during the warranty period technique, with the original supplier of equipment, a condition that exclusivity is essential for the warranty period; (Included by Law No. 8883, 1994)

XVIII - shopping or hiring of services for the supply of ships, vessels, aircraft or troops and their means of travel when in any short-term stay in ports, airports or locations other than their headquarters, because of operational movement or training, when the paucity of legal deadlines can jeopardize the normal operations and purposes and provided that its value does not exceed the limit provided in paragraph "a" from embarking upon II art. 23 of this Law: (Included by Law No. 8883, 1994)

XIX - for purchasing material for use in military, with the exception of materials used and administrative staff, when necessary to maintain the standardization required by the framework of logistic support of naval, air and land, on the advice of the commission established by decree; (Included by Law No. 8883, 1994)

XX - the hiring of association of the handicapped, nonprofit, and of proven competence, by bodies or entities of the Public Admininistração, for the provision of services or supply of manpower, since the contracted price is consistent with the market price. (Included by Law No. 8883, 1994)

XXI - to purchase goods and materials used exclusively for scientific and technological resources provided by Capes by FINEP, CNPq or other institutions to promote research CNPq for this specific purpose; (Writing amended by Law No. 12,349 , 2010)

XXII - in contracting to supply or supply of electricity and natural gas operator, permitted or authorized under the rules of the specific legislation, (including by Law No. 9648 of 1998)

XXIII - in hiring by a public enterprise or mixed capital company with its subsidiaries and affiliates for the purchase or sale of assets, provision or obtaining services from the contracted price is compatible with market prices. (including the Law No. 9648, 1998)

XXIV - for the procurement of services with social organizations, qualified within their respective spheres of government for activities covered by the management contract. (Included by Law No. 9648 of 1998)

XXV - the hiring done by the Institute of Science and Technology - ICT or by funding agency for technology transfer and licensing rights to use or exploitation of protected intellectual property. (Included by Law No. 10,973, 2004)

XXVI - at the conclusion of the program contract with a federate or with an entity of its in the provision of public services so under terms permitted in the public consortium contract or cooperative agreement. (Included by Law No. 11,107 , 2005)

XXVII - in hiring the collection, processing and marketing of municipal waste recycled or reused in areas with a system of garbage collection, made by cooperatives formed exclusively by individuals of low income recognized by the public and collectors of recyclable materials with the use of equipment compatible with the technical, environmental and public health. (Writing amended by Law No. 11,445, 2007).

XXVIII - to provide goods and services produced or rendered in the country, involving, cumulatively complex technological and national defense, by a commission specially appointed by the highest authority of the board. (including Law No. 11484 of 2007) .

XXIX - the acquisition of goods and contracting services to meet the military contingents of the Brazilian military services used in peacekeeping operations abroad, necessarily justified regarding the price and choice of supplier or service provider and ratified by the Force Commander (Included by Law No. 11783, 2008).

XXX - in hiring institution or organization, public or private, or nonprofit, to provide technical assistance and rural extension under the National Programme of Technical Assistance and Rural Extension in Family Agriculture and Agrarian Reform, established by federal law. (including Law No. 12188 of 2010)

XXXI - hires in order to comply with the provisions of articles. 3 (including Law No. 12349, 2010) to 4 to 5 to 20 of Law n and the 10 973 of 2 December 2004, the general principles of contract contained therein.

Sole Paragraph. The percentages mentioned in clauses I and II of the caput of this Article shall be 20% (twenty percent) for purchases, works and services contracted by public, mixed-capital company, a public authority or foundation and qualified under the law, as Executing Agencies. (Writing amended by Law No. 11,107, 2005)

Article 25. Bidding is not required when there is a possibility of competition, in particular:

I - for purchase of materials, equipment, or genres that can only be supplied by the producer, company or sole trade representative, sealed brand preference, and the proof of exclusivity being made by an attestation by the national business registry site to be held in the bidding or construction or service by trade union, federation or the Employers' Confederation, or even by similar entities;

II - for the technical services listed in Art. 13 of this Law, whether with professionals or companies of recognized expertise, exemption does not apply for advertising and publicity;

III - to hire professional any artistic endeavor, directly or through a sole entrepreneur, provided they are recognized by the critics or the public.

§ 1 to be deemed to have recognized expertise in the professional or enterprise whose concept within his field of expertise, due to previous performance studies, experiments, publications, organizing, equipping, technical staff, or other requirements related to their activities, may infer that their work is essential and the most appropriate to the full satisfaction of the contract.

§ 2 The hypothesis in this article, and in any case of dismissal, if proven overpricing, jointly and severally liable for damage caused to the treasury for the supplier or service provider and the responsible public officer, subject to legal penalties.

APPENDIX VII

Decomposition of the Procurement Process

Process		Summary
Procurement Stage I: Purchase Request	I	A need is identified, which must be met. "Z" places request on IntSys detailing requirements (product, product details and description, quantity, level of urgency). Request Number (RN) is generated.
Procurement Stage II: Receipt of Request	II	"A" receives request through IntSys and redirects it to the person/team in charge for that particular product category ("B") through IntSys.
Procurement Stage III: Supplier Selection & Contact ("Bidding" - Part 1)	III	1. "B" receives request through IntSys and acknowledges receipt through system.
	IV	2. "B" ensures that there are no errors and/or missing information. If incorrect, sends it back.
	V	3. "B" searches for suppliers who can attend requirement either through IntSys (existing suppliers) or the Internet (new suppliers).
	VI	4. Based on research, "B" sends e-mail to suppliers selected requesting quotes though the IntSys. Up to 10 suppliers are selected and contacted.
	VII	5. Quotes from suppliers are received on Outlook, through team e-mail.
	VIII	6. "B" checks team inbox and forwards relevant e-mails to own inbox.
	IX	7. "B" selects 3 quotes from those received, prints them and places them in a physical file (PF), with RN and relevant notes.
	X	8. "B" marks on IntSys that step has been completed.
	XI	9. "B" takes PF to "C". "C" accepts the PF and takes over the process.
Procurement Stage IV: Supplier Selection & Contract (Bidding Process - Part 2)	XII	1. "C" checks RN on IntSys and ensures completeness of information.
	XIII	2. "C" enters quote information on IntSys. All of the information on each quote must be typed into IntSys (i.e. supplier, price, payment and delviery conditions).
	XIV	3. IntSys generates a "comparative map", assigning a winning quote.
	XV	4. "C" either accepts IntSys's determination or chooses to override it, opting for another quote.

	XVI	4b. If "C" overrides Intsys's choice, he/she must enter justification into system, print a copy of this screen and have his manager sign it. This copy goes into PF. If "C" accepts IntSys's choice, he/she skips straight to next step.
	XVII	5. "C" generates a Purchase Order (PO) on IntSys.
	XVIII	6. "C" checks on IntSys whether the budget has been allocated for this purchase. If it has not, "C" must request that "Z" do so. If budget has already been allocated, "C" goes straight to the next step.
	XIX	7. "C" obtains manager approval to proceed with request through IntSys.
	XX	8. In an MS Word document, "C" fills out the "Reserve of Cash" (RoC) form, with details and PO number.
	XXI	9. "C" takes this sheet to "D" in the Financial Department. "D" accepts this sheet and takes over process.
Procurement Stage V: Reserve of Cash ("Empenho")	XXII	1. "D" checks IntSys to view details of the PO, check for accuracy and ensure budget has been allocated.
	XXIII	2. "D" enters all relevant information for this PO on SIAFI, formally confirming that cash has been reserved for this purchase. This step is automatically recorded on the Transparency Portal.
	XXIV	3. "D" prints RoC confirmation off SIAFI, scans it, and sends it via e-mail to "C"'s entire team. The e-mail contains several RoCs in bulk. "D" also stores a paper copy in his/her file.
Procurement Stage VI: Purchase Request Confirmation	XXV	1. "C"'s entire team receives the e-mail. "C" will check to see if his/her RoC is included and will then proceed with process.
	XXVI	2. "C" prints e-mail and places it in the PF.
	XXVII	3. On IntSys, "C" confirms that PO has been approved.
	XVIII	4. "C" informs winning bidder that he has won. "C" sends e-mail with instructions confirming this information.
	XXIX	5. Once supplier has acknowledged request and confirmed he will supply, it, "C" marks PO on IntSys as "supplier acknowledged".
	XXX	6. "C" takes the PF to "E". "E" accepts the PF and takes over the process.
Procurement Stage VII: Delivery & Liquidation	XXXI	1. "E" waits for supplier to send invoice, both by e-mail and by post. If "E" does not receive this within a certain timeframe, "E" will contact supplier by either e-mail or telephone.
	XXXII	2. Upon receipt, "E" enter invoice and delivery details into IntSys.

	XXXIII	3. "E" sends "Z" delivery instructions and awaits his/her confirmation that supplies have been delivered.
	XXXIV	4. "E" finalizes PO on IntSys.
	XXXV	5. "E" places in PF a copy of the invoice and files it away.
	XXXVI	6. "E" takes original copy of invoice to "D". "D" accepts this and takes over process.
Procurement Stage VIII: Payment	XXXVII	1. "D" checks IntSys to to verify accuracy of details and ensure that process has been finalized.
	XXXVIII	2. "D" approves payment and enter payment information on SIAFI. This step is automatically recorded on Transparency Portal.
	XXXIX	3. "D" stores the invoice in a file.

APPENDIX VIII

Extended DiCoT Framework

Model	Principle	Brief Explanation
Physical	Space and cognition	How phsyical layouts supports (or fails to support) cognition.
	Perceptual principle	Mapping between spatial layout and cognitive structures.
	Naturalness principle	Refers to the "stimulus-response" compatibility.
	Subtle bodily supports	The use of body to support cognitive processes (e.g. pointing or gesticulating).
	Situation awareness	Refers to how accessible work of the team is, including proximity of others around them.
	Horizon of observation	Refers to what can be seen or heard by a person.
	Arrangement of equipment	Physical layout of equipment.
Artefact	Mediating artefacts	Include artefact that are introduced in order to complete task.
	Creating scaffolding	External artefacts and environmental cues introduced to simplify cognitive tasks.
	Representation - goal parity	Representation of the relationship between current state and goal state of artefact.
	Coordination of resources	Resources can be internally and externally coordinated to aid action and cognition.
	Distributed Memory (*)	How information is redundantly collected and stored.
	Modularity (*)	Imbued "precomputational activities" and properties in artefacts.
Information Flow	Information movement	How information moves around the system, e.g. artifacts, text, verbal, telephone, etc.
	Information transformation	Transformation takes place when representation of information changes.
	Information hubs	Where different information channels meet and different sources are processed together.

	Buffering	Refers to the arrival of new information that may interfere with ongoing activity.
	Communication bandwidth	Face-to-face communication that takes place.
	Informal communication	Informal communication which represent an important function.
	Behavioral trigger factors	Trigger mechanisms that elicit behavior.
Social	Goal Tree and Parity (*)	Clear and established main goal and sub-goals.
	Hierarchy and High Level Coordination (*)	Delegating power of decision to a higher authority.
	Division of Labor (*)	Cognition of tasks and coordination.
	Distribution of Knowledge (*)	How knowledge is shared amongst individuals.
	Sequential Control of Action (*)	Procedure is sequentially constrained if reliant on the completion of previous tasks.
	Mediating Structure (*)	How communication and social interactions take place (artefacts or language).
Evolutionary	Cultural heritage	How processes established through time shape current behavior.
	Expert coupling	Degree to which user and system work in tandem and are coupled.